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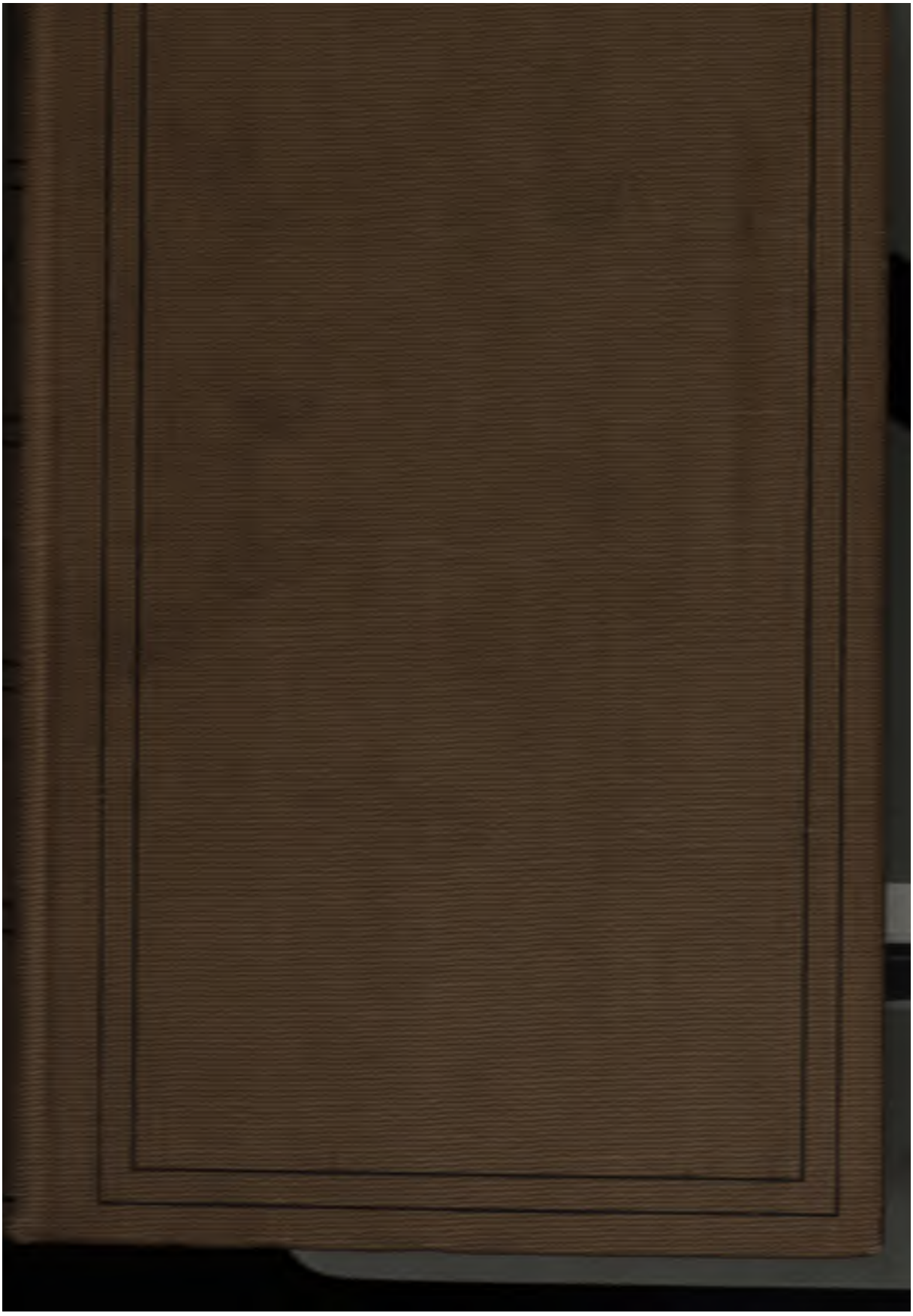

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CONTENTS.

	Page.
I. Organization and Personnel	3
II. Recommendations:	
1. Summarized	4
2. High school education	6
3. Normal schools	7
4. Changes in white high schools	7
5. Changes in colored high schools	9
6. Elementary schools	10
a. 8-room building	10
b. 16-room building	10
c. 16-room extensible type	11
d. 24-room building	12
7. Manual training centers	12
8. Parental and ungraded schools	13
9. Night schools	13
10. Permanent architect	14
11. Permanent schoolhouse commission	15
12. Appropriations—	
a. Methods	15
b. Report of a former commission	18
c. Draft of proposed law	20
d. Size of appropriations	22
13. Typical class rooms—	
a. Size and plan	23
b. Light	24
c. Heat and ventilation	25
d. Blackboards	26
e. Plumbing	26
f. Air moistening	27
14. Play rooms	29
15. Playgrounds	29
16. Gymnasiums and athletic fields	30
17. Assembly halls	30
18. Schools to be abandoned—	
Potomac, McCormick	31
Thomson, Threlkeld, Webster, Abbott	32
Berret, J. F. Cook, High Street	33
Hillsdale, Lincoln, Bunker Hill, Force	34
Adams, Eastern High, Central High, Bradley	35
Garfield, Jefferson, Johnson Annex	36
19. Portable schoolhouses	36
20. Fireproofing	37
21. Estimates	37
III. Washington Schools:	
1. B. B. French Manual Training	38
2. Blow and Cardoza	38

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III. Washington Schools—Continued. Page.
3. Langston 39
4. Ketcham 39
5. New school No. 153 40
6. New school No. 154 40
7. Figures of costs 41
IV. New York Schools:
1. General features 42
2. School No. 146, Brooklyn 43
3. De Witt Clinton High School 43
4. Stuyvesant High School 44
5. School No. 84, Long Island City 45
6. School No. 40, Bronx 45
7. School No. 30, Richmond 46
8. Parental Home School, Flushing 46
9. New type school, New York 46
V. Chicago Schools:
1. Stephen K. Hayt School 47
2. Graeme-Stewart School 47
3. Bernard-Moos School 48
4. New Tilton School 48
VI. Boston Schools:
1. General features 50
2. Mather school 53
3. Thomas Gardner School 53
4. Dearborn School 54
5. Oliver Wendell Holmes School 54
6. John G. Whittier School 55
7. Oliver Hazard Perry School 55
8. James Otis School 56
9. Samuel W. Mason School 56
10. Charlestown High School 56
11. Normal and Girls' Latin group 58
12. Figures of cost 60
13. Remarks 61
VII. St. Louis Schools:
1. General features 62
2. Patrick Henry type 66
3. Lafayette type 66
4. William Clark type 67
5. New type (Oak Hill) 67
6. McKinley High School 67
7. Tables of cost 68
VIII. Cleveland Schools:
1. Watterson School 68
2. Halle School 69
3. Doan School 69
4. Rosedale School 69
IX. Myra Jones School, Detroit 70
X. School No. 13, Rochester, N. Y. 70
XI. Springfield (Mass.) Schools 71
XII. Brookline (Mass.) Schools 72
XIII. Providence (R. I.) Schools 73
XIV. Baltimore Schools 73
XV. Minutes of Commission 75

REPORT OF THE
SCHOOLHOUSE COMMISSION

WASHINGTON, *February 25, 1908.*

SIR: The Commission created by act of Congress, approved June 20, 1906, consisting of the superintendent of schools of the District of Columbia, the Supervising Architect of the United States Treasury, and the Engineer Commissioner of the District of Columbia, to report to Congress a general plan for the consolidation of public schools in the District of Columbia, and for other purposes, has the honor to submit herewith its report.

Very respectfully,

A. T. STUART,
Superintendent of Schools.
JAMES KNOX TAYLOR,
Supervising Architect, U. S. Treasury.
JAY J. MORROW,
Major, Corps of Engineers, U. S. Army,
Engineer Commissioner, District of Columbia.

Hon. CHARLES W. FAIRBANKS,
President of the Senate, United States Senate.

The Schoolhouse Commission was created by public act No. 254, Fifty-ninth Congress, first session, entitled "An Act to fix and regulate the salaries of teachers, school officers, and other employees of the board of education of the District of Columbia," approved June 20, 1906, by the following section:

SEC. 11. That a Commission, consisting of the superintendent of schools, the Engineer Commissioner, and the Supervising Architect of the Treasury Department is hereby created, for the purpose of submitting to Congress at its session beginning December, nineteen hundred and six—

First. A general plan for the consolidation of the public schools in the District of Columbia and the abandonment and sale of such school buildings and sites as may by them be deemed necessary and desirable for the best good of the public school service.

Second. A general plan for the character, size, and location of school buildings in accordance with which the educational and business interests of the public school system may be subserved.

In the District appropriation act for the expenses of the fiscal year ending June 30, 1908, the creation of this Commission was made effective by an appropriation of $1,500 among the appropriations for the support of the public schools of the District, as follows:

For the expenses of the Commission created by section eleven of the act of Congress approved June twentieth, nineteen hundred and six, to regulate the salaries of school teachers, officers, and employees of the District of Columbia, including traveling expenses, personal services, printing, and other incidental items, one thousand five hundred dollars, or so much thereof as may be necessary, to be immediately available.

At the time of the passage of these acts the office of Engineer Commissioner of the District of Columbia was filled by Maj. John Biddle, Corps of Engineers, and a number of the inspections were made by him prior to his relief on May 1, 1907. Since that date the office of Engineer Commissioner has been filled by Capt. (now Major) Jay J. Morrow, Corps of Engineers, U. S. Army, who has made some of the inspections. The office of superintendent of schools was filled by Dr. Wm. E. Chancellor until January 4, 1908, and all inspections were made by him. Since that date the office has been filled by Prof. A. T. Stuart. The office of Supervising Architect of the Treasury has been continuously filled by Mr. James Knox Taylor, who made all inspections except as noted later in this report.

The Commission has inspected every school building in the District of Columbia, and has made trips of inspection to the following cities, in each of which from 1 to 12 modern school buildings were inspected:

Baltimore, Md.; New York City and Brooklyn, N. Y.; East Orange and Bloomfield, N. J.; Rochester and Syracuse, N. Y.; Springfield, Brookline, Newton, and Boston, Mass.; Providence, R. I.; St. Louis, Mo.; Chicago, Ill.; Muskegon, Mich.; Detroit, Mich.; and Cleveland, Ohio.

The Commission has had exceptional opportunities of obtaining the views of members of boards of education and superintendents and assistant superintendents of schools in various sections of the country and has especially availed itself of the fund of experience acquired in the study of various problems in school architecture by the architects in charge of the work of constructing the school buildings in these various cities.

The Commission desires, first, to briefly summarize its findings and to refer to a more careful perusal of the body of the report for the more detailed argument in each case.

The Commission recommends:

I. The abandonment of the 8-room school building as a type, except as the first half of an ultimate 16-room building.

II. The adoption of the 16-room building and of the 24-room building as types for consolidated primary and grammar schools.

III. The partial adoption of the system of separate primary and grammar schools to better utilize the present 8-room school buildings.

IV. The construction of special high schools rather than of polytechnic high schools.

V. The immediate abandonment of the following school buildings: Potomac, McCormick, Thomson, John F. Cook, Threlkeld, High Street, Hillsdale, Bunker Hill, Garfield, and Johnson Annex.

VI. The early abandonment of the following schools: Webster, Abbot, Berret, Lincoln, Force, Adams, Bradley, and Jefferson.

VII. The abandonment of Central and Eastern high schools as high schools, and their conversion into grammar schools, and the construction of new Eastern and Central high schools.

VIII. The enlargement of McKinley, Business, and Western high schools, and the use of Business High School for all but the first year of commercial work, which first year's instruction should be given at each of the academic high schools.

IX. The conversion of present Colored High School (M street) into an elementary school and construction of a new colored high school with provisions therein for commercial instruction.

X. The construction of white and colored normal schools or colleges.

XI. The construction of a number of manual training centers, similar to the B. B. French School.

XII. More liberal provision in new buildings for assembly rooms and gymnasium rooms.

XIII. More liberal provision for playground space and the establishment of athletic fields.

XIV. Greater use of fireproof construction in buildings, with a higher unit of cost than now allowed by appropriations.

XV. The use of portable buildings to relieve unforeseen congestion of school population.

XVI. The abandonment of the present method of appropriating funds for new school buildings and sites and the adoption instead of the annual appropriation of two lump funds, one for sites and one for buildings.

XVII. The permanent continuance of the Schoolhouse Commission, by law, with the following functions:

(*a*) Appointment of a school architect, who shall take over and carry out, under the Commission, all of the present duties of the inspector of buildings as to design, construction, and maintenance of school buildings.

(*b*) Appointment and control over janitors, enginemen, and firemen in school buildings, and control over installing and maintaining furniture and equipment of school buildings.

(*c*) Purchase or condemnation of schoolhouse sites, after certificate from board of education as to necessity for new school sites and

allotment from the lump fund appropriated by Congress of the necessary funds to purchase said sites; this with a view to obtaining the site some time in advance of the building of the schoolhouse.

(*d*) Appointment of architects to design buildings, and of necessary employees in the office of the school architect to supervise and inspect this work.

(*e*) Allotment from the lump fund appropriated by Congress for construction of new buildings after certificate from the board of education as to necessity for new school building; and making of contract for erection of said building.

(*f*) Submission of annual estimates, through Commissioners of the District of Columbia, and of an annual report into which shall be gathered notable instances of new buildings in other municipalities.

XVIII. And finally, the Commission recommends a substantial increase in the size of the appropriations for sites and buildings for the next three to five years to make up for the present backward condition of our schools due to insufficient appropriations for new buildings of recent years.

HIGH SCHOOL EDUCATION.

The general scheme for education in the District of Columbia requires two entirely separate systems of school buildings. The first of these systems is for the white pupils of the District and the second for the colored pupils. The attendance in the white schools is a little over twice that in the colored and the attendance in the white high schools is about four times that of the colored high schools. This apportionment of the pupils necessitates slight variations in the plans for high schools.

The Commission finds that the practice in the cities of the country in respect to high schools differs materially. Some cities have genuinely polytechnic high schools in which nine or ten different courses are offered while other cities have special high schools, each offering but one or two courses. The area of the District of Columbia—some 64 square miles—which is not as great as the areas of most of the larger cities of the country, would seem to indicate the advisability of establishing special high schools here rather than polytechnic high schools. This also tends somewhat to the reduction of expense for equipment.

The Commission therefore recommends that the school systems for the white and colored pupils be arranged according to the following plan:

FOR THE WHITE SCHOOLS.

1. A normal school or normal college with a large model practice department.

2. At least three general academic high schools, immediately.

3. A system of elementary schools of which some should be complete grammar schools and some primary and intermediate schools.

4. A system of schools to be known as manual training centers, for manual training for boys and domestic science and art for girls.

FOR THE COLORED SCHOOLS.

A similar system, except that they seem to require at present several less high schools.

WHITE AND COLORED NORMAL SCHOOLS.

The District of Columbia already owns an excellent site for a white normal school adjacent to an 8-room elementary school. The Commission recommends that an appropriation be granted for a normal school or normal college to accommodate an attendance of 300 pupils and the erection of the building on this site. This appropriation should include provision not only for the academic and professional work of the normal school proper, but also for the construction of a pergolo, or connecting corridor, between the Ross School adjacent and the new school, so that the two schools may be operated as one.

For the colored normal school or college the Commission recommends the purchase of a suitable site and the construction thereon of a normal school building to accommodate an attendance of 240 pupils and a practice school building adjacent to it to accommodate at least 16 elementary classes, including a kindergarten.

WHITE HIGH SCHOOLS.

The District of Columbia has now 3 academic high schools: The Central High School, which accommodates about 1,000 pupils; the Western High School, which accommodates about 600 pupils, and the Eastern High School, which accommodates about 450 pupils.

The Central High School is housed in a structure poorly adapted to this purpose. It could, however, be converted, without great expense, into a suitable intermediate grammar school. The Commission regards the present location of the Central High School as not especially advantageous and recommends, therefore, that this high school be transferred to the northern part of the city. It would appear advisable to purchase in the north or northwest a site suitable for a building to accommodate 1,200 pupils in academic and scientific subjects.

Similarly, the Commission finds that the Eastern High School building is not well adapted to the purposes of high school instruction, but that it could be used, with but very slight expense for changes, as a building for intermediate grammar school work. The Commission therefore recommends that a site be purchased some-

what to the east of the present Eastern High School and that a building be erected upon it to accommodate 800 pupils in academic and scientific subjects.

One of the finest school properties in this country is the present Western High School with its site of several acres. This building is, however, not large enough and the Commission recommends an appropriation for the enlargement and improvement of the building so that it will accommodate 800 pupils in academic and scientific subjects.

The Commission would call the attention of Congress to the fact that there is now no academic high school to accommodate the high school attendance in the southwest section of the city. We believe that within a period of a few years provision should be made for a small high school in that district, but that the erection of such a high school should be delayed until after the completion of these others as indicated.

THE M'KINLEY MANUAL TRAINING HIGH SCHOOL.

The white mechanic's arts high school of the District of Columbia has at present an attendance of three times as many pupils as it can accommodate within the building erected for that purpose. In other words, there are 3 children for every seat in the high school. The seating capacity of the building is about 250 and the building is now being enlarged to a size sufficient to accommodate about 500 pupils. There is need of such a high school in the District to accommodate not less than 1,200 pupils. Not only is the building crowded now beyond its capacity, and not only are the pupils housed in rented buildings and at other nearby schools, but the school authorities are refusing admission to many pupils who would be glad to attend it. The Commission considers its recommendation of the extension of this building to accommodate 1,200 pupils as extremely conservative.

In order to provide for a mechanic's arts high school of this size at the present location, it would be necessary to acquire possession, either by purchase or by condemnation, of the block of houses on Rhode Island avenue to the east of the present building. When the building is extended under present operations, it will not be more than one-half as large as is really necessary. The Commission therefore recommends that a suitable appropriation be granted at an early date for the purpose indicated.

There are no accommodations for any yard for the school. The Commission suggests that there be granted an appropriation for the acquirement, by purchase or condemnation, of the real estate lying southeast of the building on Marion street.

BUSINESS HIGH SCHOOL.

The Business High School was completed in 1906. It has accommodations for 700 pupils. It now houses 870 and indications are that the growth of the high school will be at the rate of at least 150 a year for some time to come. The present first-year class in the Business High School is the largest that has ever entered any high school in the history of the District.

The site for the Business High School is sufficient for about 10 or 12 more class rooms at the north end of the building, and when the building was constructed, provision was made for an extension of that size.

The Commission, however, is of the opinion that the demand for commercial instruction in the District is such as to make it impracticable to erect upon this site a high school large enough to take care of all applicants. The addition suggested—10 rooms—would provide for about 350 more pupils, making a total provision of attendance less than 1,100 pupils. The Commission, however, is of the opinion that there should be offered in each of the academic high schools—that is, the new Central High School, Western High School, and Eastern High School—a course of first-year work in commercial subjects, so that pupils who have completed the first-year work in these division high schools may enter the second year of the Central Business High School. It is believed that this plan is feasible and more desirable than to enlarge the Business High School to any further extent than recommended. In recommending an appropriation for the extension of this building the Commission would call attention to the desirability of a small appropriation for the purpose of changing the windows in a few class rooms wherein light is deficient.

THE COLORED ACADEMIC HIGH SCHOOL.

The present M Street High School for the colored pupils in academic and scientific subjects is too small for the purpose and is not well adapted for high school instruction. The Commission recommends that this building be converted into an elementary school, which can be done at small expense, that a large site be purchased in the vicinity, and that a high school be erected to accommodate 1,200 pupils. In this high school provision should also be made for commercial courses of at least three years' duration.

ARMSTRONG MANUAL TRAINING HIGH SCHOOL.

The present high school for the instruction of colored youth in industrial subjects and in domestic science and art is one of the most attractive school buildings in this country. At present it is just

large enough to accommodate its attendance. The site is rather too small. It should be increased by the purchase of land at the east and west. By taking out the commercial pupils, as suggested, the present building would perhaps be large enough for four or five years to come.

ELEMENTARY SCHOOLS.

About 100 of the elementary schools of the District of Columbia are 8-room buildings. The 8-room building has many advantages, as it can be well arranged, involves a minimum of corridor space and a maximum of schoolroom area, lends itself readily to the best possible lighting arrangement, and need not be higher than two floors. The smaller number of pupils gives better control and more individual oversight. The distance the pupils have to travel averages much less than where the schools are larger. In some municipalities, notably in Boston, primary schools and grammar schools are separately constructed, although one master or principal controls both schools. Here primary and grammar schools are kept together and only high school students separated. The 8-room building, however, has grave disadvantages, being less economical of administration both as to up-keep and as to teaching. Possibly its most serious disadvantage develops as a result of the organization of the educational system into eight grades of school work, besides the kindergarten, below the high schools. The 8-room building, therefore, allows but one room for each grade, without any room for kindergarten, and if a school has a class of 50 pupils in the first primary grade it will seldom have over 60 per cent as many pupils in the eighth grade, the result being that either some rooms are only half filled or others are so crowded that it becomes necessary that the first two grades, and maybe, also, the third, must be put on half time, largely increasing the work of the teachers in primary work, although, as a rule, these teachers receive less pay than the teachers in the higher or grammar grades. The Commission does not recommend the separation of the primary and the grammar schools, similar to the Boston system, in the construction of new buildings, but believes that many of the 8-room buildings might be utilized to advantage by using, say, one or two of some group of three for primary work and the third only for grammar work. The Commission, however, does believe that no more 8-room school buildings should be constructed, except buildings of the extensible type—that is, an 8-room building should be built that would be capable of being extended with the growth of the section, at least to 12 rooms, and possibly, where the section is building up rapidly, later to 16.

It would appear that the 16-room building is a good type for a finished school building. Taking the usual school statistics, this would result in an organization about as follows:

One eighth-grade class, 1 seventh-grade class, 1 sixth-grade class, 2 fifth-grade classes, 2 fourth-grade classes, 2 third-grade classes, 3 second-grade classes, 3 first-grade classes, 2 kindergarten classes in one large room. This 16-room school building should also contain a manual training center with provisions for one room for woodworking and carpentering for boys, and of one or two rooms for girls for instruction in cooking, sewing, and similar work.

There thus results a type, which the Commission advocates, of an 8-room extensible type having for its ultimate goal a building of 16 schoolrooms, the finished 16-room building to be constructed in the locality where the population may be regarded as fixed, the 8-room extensible type to be installed where 8 rooms are required in a section possibly only half built up. Examples of the 8-room building are shown in this report among the newer Washington schools.

Admirable examples of the 8-room extensible type of building are herewith submitted and are described later with plans. Reference is made to the Halle School, in Cleveland, Ohio, to the John H. Ketcham School here in Washington, and to the plans of the Stephen K. Hayt and Bernard Moos schools in Chicago, which are exactly of this type if constructed in two floors rather than in three as built in Chicago.

The Langston School in Washington is a good example of an 8-room school extensible to 12 rooms.

Admirable additional examples of the completed 16-room type may be found later in this report in the new type of school proposed for New York, if built of two floors only, and approximations to this size school are shown in the Doan School at Cleveland (17 rooms and assembly), in the Oliver Hazard Perry at Boston (14 rooms and assembly), and in the new schools under construction in Washington, D. C., to relieve the Mott School, and in Mount Pleasant.

Sixteen-room extensible type.—The 16-room building is a good type for construction where an old building is to be replaced and the population is fairly settled; and where a 16-room building is required in this locality, possibly the 8-room type carried to its maximum extension of 16 rooms is the proper type. The Commission, however, believes that a 16-room extensible type should also be adopted for construction where a 16-room building is necessary in a growing section. This should be a 2-story building, with provision for the construction of 4 rooms at each end to provide for the extension of the building as necessity demands, first, into a 20-room building and later into a 24-room building.

Types for this construction will be found later in this report. In 3-story buildings the Hayt and Moos schools in Chicago are admirable for extension from either 12 or 18 rooms to 24 rooms and as an example of a 14-room school of 3 stories, extensible into a 26-room building, the Thomas Gardner School in Boston is excellent.

Twenty-four room building.—This it is believed should be regarded as the model grammar school building where there is sufficient demand for a building so large, and as the type to which all 16-room buildings, where the population is growing, should attain. It should preferably be a 2-story building, with 24 class rooms, an assembly room, and a gymnasium, with two basement rooms suitable for manual training and domestic science, respectively.

Types of building suitable for this will be found later in the St. Louis schools which have 22 to 26 rooms, including the kindergarten rooms, but which have no large assembly room. The Commission desires to express itself as believing that the people of Washington could have no better fortune in school matters than that Congress should authorize the construction each year of from two to five buildings of this class and cost, the buildings being eminently suitable for Washington conditions.

Other good buildings of this size are referred to in this report as follows: The Oliver Wendell Holmes School in Boston (3 floors); the Rosedale School in Cleveland (19 rooms only on 3 floors); School No. 30 in New York (24 rooms but no assembly room, if built of but 2 floors in height); the Dearborn School in Boston (21 rooms only, on 3 floors); the Graeme Stewart, Hayt, and Moos schools in Chicago (all of 3 floors); and School No. 13 in Rochester (19 rooms only on 2 floors).

MANUAL TRAINING CENTERS.

In addition to the manual training schools which the Commission recommends in new school buildings the Commission also recommends that, as rapidly as possible, rented manual training centers be dispensed with and that buildings should be constructed at various points in the city adapted solely for manual training work.

Congress has already erected in the District of Columbia one manual training center of the type that is proposed by this Commission. The French School is located in a building with 3 rooms upon the first floor and 3 upon the second. A description of this school with plans will be found elsewhere in this report.

The manual training centers proposed by this Commission should have each about 6 rooms—3 for work of boys and 3 for work of girls. As far as possible they should be located near a grammar school. They would be attended by pupils from 5 or 6 schools in that neighborhood, who would go to them for periods of two hours at a time at stated intervals. It is recommended that there be ultimately about 12 such centers—7 or 8 for white pupils and 4 or 5 for colored pupils. They should be constructed at the rate of 2 or 3 per year until the above recommended number is reached, after which they may be added to as needed.

PARENTAL AND UNGRADED SCHOOLS.

In most of the cities of the North and West provision is being made for the special education of the children, who, for one reason or another, are not able to benefit by attendance in the regular schools. Already Congress has made provision for the instruction of pupils in such schools, but has not made provisions for buildings. The Commission recommends that 4 of these buildings be erected for the purpose of educating children with physical defects or habitual absentees from school. Of these schools 2 should be white and 2 colored. They should be so located as to give fairly convenient access from the different parts of the city. The expense involved need not be large, since these schools would not require over 3 rooms each, one of which should be a combined manual training room. The purpose of these ungraded schools is to care for children who are in day attendance only.

There is required also, however, both a white and a colored parental school which should care for children, to be properly committed to it, both day and night until their education is complete. Such parental schools should be located upon plots of ground large enough for both play and sports and for gardening. Each of these parental schools should accommodate about 30 pupils. Plans are submitted later in this report of a complete and expansible installation of this kind for New York City.

NIGHT SCHOOLS.

It appears that often there is demand in a neighborhood for a night school of a different character from the day school housed in the same building. It would appear desirable that in the construction of at least one-third of the elementary and high schools in the future special room should be provided for the installation of instruction in trades. Some sections of the city would desire instruction in certain trades and other sections would desire instruction in other trades. It would appear probable that instruction should be provided for in possibly 25 different trades for men, women, and youth, both white and colored.

RECOMMENDATION FOR THE EMPLOYMENT OF A PERMANENT SCHOOL ARCHITECT.

It is noticeable that on the inspections of the Commission, the best school buildings were found where a permanent municipal or school architect is employed. In Boston there is a permanent schoolhouse commission of which one member is the architect, and this commission has charge of the selection of sites and the erection of buildings thereon, subject only to the direction of the board of education as

to what particular locality demands the building. The architect does not, however, necessarily prepare the plans for the building, but usually employs an architect for this purpose and supervises the preparation of plans and the erection of the building. This commission also has charge of maintenance and repair of buildings and supervision and control of janitor service. The new schoolhouses turned out under this system are exceptionally fine, the interior being notably plain, but good materials and good workmanship in all minor details from basement to roof give the impression of exceptionally good quality which is not observed so universally elsewhere, except in the newer buildings in St. Louis.

In New York one man is employed under the board of education as architect and superintendent of school buildings and the solution of the problem here has been dependent entirely upon him. Practically all plans are prepared in his office. The situation is probably different from that of any other American city (except, possibly, the congested sections in the city of Chicago) and not at all applicable to Washington conditions. The schools are enormous, playground space almost impossible to obtain except inside the building or on the roofs, and buildings must necessarily be of many stories, contain many rooms, and must be fireproof. Some of their suburban schools, however, approximate more nearly to Washington conditions.

In Chicago an architect is employed under the direction of the board of education and here notably good results are obtained in the construction of schools of extensible type, and in the congested section of large schools similar to New York schools. All plans are prepared in this office. In St. Louis, where the school buildings are possibly architecturally in advance of any school buildings in the country (excepting in the one point of assembly rooms in grammar schools) an architect is employed under the school commission and all plans are directly prepared in his office.

This system of having all plans prepared by a school architect has its disadvantages in requiring the organization of either too large a force to be constantly employed or requiring the buildings to be taken up in succession, which will cause a delay in some cases where the building may be urgently needed, unless, as in most of these cases, the definite amount of the appropriation for new buildings is at least approximately known well in advance. It is believed to be better adapted to the Washington situation to have an organization similar to that in Boston, as appropriations for new buildings in Washington become available annually and in varying amounts. The architect should be given supervisory authority over local architects who may utilize their force in the preparation of plans subject to his supervision, similar to the way the work is now done in the office of the inspector of buildings, when the appropriation is suffi-

cient to allow for the compensation of an architect. The Commission recommends that the organization of the architect's office be only large enough to provide for the keeping of plans and records and for this supervisory work, but that the architect himself be a man of considerable experience in the design of school buildings as well as of general architectural training.

PERMANENCY OF THE SCHOOLHOUSE COMMISSION.

The Commission recommends that the schoolhouse commission, created as herein outlined, be made a permanent organization and be given control of the erection, repair, and maintenance of all school buildings in the District of Columbia and empowered to devise a system somewhat on the lines of the system in Boston for the conduct of that work. As organized the Commission is a commission ex officio, involves the Government in no expense, and yet provides, it is believed, all that is necessary for a successful business organization for the work outlined. The United States, the District of Columbia, and the board of education are represented on the Commission by the Supervising Architect of the Treasury, the Engineer Commissioner of the District of Columbia, and the superintendent of schools, respectively. Under the Commission the organization should be provided with an architect, who would be the executive officer, having charge of supervision over the preparation of plans and the erection of buildings and of all repairs; also of the janitor service. The Commission should be authorized to locate the school buildings, subject to direction from the board of education as to the area in which buildings shall be built, and should inaugurate proceedings for the condemnation of the necessary sites, in the failure to purchase them at a reasonable sum.

APPROPRIATIONS.

The Commission also believes that the method of making appropriations for new school buildings, as at present followed, is about the worst that could possibly be devised. It is, roughly, as follows:

The board of education recommends, through the Commissioners, to Congress, appropriations for certain new buildings. These recommendations are made up in the summer or early fall months, are forwarded to the Commissioners about October 1, are embodied in the Commissioners' estimates to Congress, which are made prior to October 15, and come to consideration before the Appropriations Committee of the House of Representatives sometimes, but rarely, before the Christmas recess, and are never passed until about March 4, during the short sessions, and until June or July in alternating years. The money is not available for use until the 1st of July and the sites and buildings are appropriated for in a single lump sum.

The site must first be purchased, or possibly condemned, before the plans for the building can be made. If the site can be purchased quickly the preparation of plans takes two or three months, and the construction of the building takes several months, so that at the best, even when the board of education's requests are granted by Congress at the first opportunity, twenty-four months must elapse from the date of the recommendation of the board of education until the building can be turned over to them for use. This places it out of the power of the board of education to provide for any unusual demand unless that demand can be foreseen by at least two years. Added to this, it should be noted that the board of education and the Commissioners of the District frequently ask for a new building two, three, and four times before the appropriation is made.

Another criticism of the method of making appropriations for school buildings as now followed is the method of making the appropriation for the site and the building under the same appropriation. There have been occasions when appropriations were made for a site and later an appropriation was made for the erection of the building on the site, but this is the exception rather than the rule.

The ordinary procedure is to appropriate a lump sum for site and building and the appropriation has been usually a definite stated sum for a building of so many rooms, no matter where the building is located. The result is obvious, that where land is cheap, the surroundings more or less squalid, a larger site can be obtained and more money left for the construction of the building than in a section where the value of the land is high and where, possibly, not a large enough tract exists entirely devoid of improvements, so that some improvements must be paid for in securing the site. There thus arises in the remote or possibly squalid section a fine building with ample playground space, while the improved section must be content with a cheaper building and on a site with comparatively no playground space whatever, while it might well be that vacant areas in the vicinity of the building for children to play on as trespassers are less numerous than in the other case. The Commission could, if necessary, point out examples of this exact result in nearly every appropriation bill within the past ten years.

Another disadvantage in the mode of appropriating a fixed and inflexible amount for each "building and site" in combined appropriation for each individual building is illustrated in the Gage and Hyde schools in this city. In these schools, after the ground was purchased and a balance left just sufficient to construct the building, the contractor in the former case encountered a submerged stream about 8 feet below the surface of the site which necessitated about 8 feet deeper foundation walls than contemplated and added about $3,000 to the cost of the building. In the second case the contractor

uncovered some very old vaults and cisterns which were used in connection with a brewery or wine house more than seventy-five years previous to the construction of the school. This required a reenforced concrete foundation which added $2,000 to the cost of the building and placed it too low in the ground, no funds being available to increase the depth of foundation walls or raise the basement story. To offset these unusual expenses important accessories had to be omitted from the buildings.

It also should be possible for the District to acquire the site some time in advance of the construction of the building, as the building is very frequently delayed by the inability to acquire a proper site without condemnation proceedings.

The alternative proposed by the Commission is that Congress should appropriate each year a certain definite lump sum for the purchase of sites and a certain definite lump sum for the construction of new buildings, the board of education then to certify to the schoolhouse commission the general locality where a school building is desired and approximately the number of seatings required in the new building. The Commission taking these requests up in the order in which they are made by the board of education, will purchase or condemn a sufficient site, payable from one fund, and at once provide for the making of plans for a building from the other fund. In this way should an unusual call be made upon the board of education, the building could be provided for it within a year's time. The Commission believes that until some such system as this is adopted by Congress, no satisfactory solution of the new school building problem can ever be reached. Possibly the appropriations could be assured in advance, as is now done in many municipalities by pledging a definite percentage of tax collections to the fund for sites and another percentage for buildings.

It is not believed advisable to create the office of a school architect to be placed under the board of education. The Commission believes that functions of the board of education should be confined to educational matters pure and simple, and that, failing the legislation making a permanent schoolhouse commission, a school or municipal architect should be appointed to operate under the Commissioners of the District of Columbia, similar to the plan now being followed where the inspector of buildings acts in this capacity. The permanent establishment of the schoolhouse commission does away with the main objection of the board of education to the present system, namely, that the board of education has no control over the erection and repair of its buildings, as the board would be represented on this Commission by the superintendent of schools.

Another change is believed to be urgently necessary and is recommended by the Commission. At present the janitors of the schools

are under the control of the board of education, while the repair of the buildings is under the superintendent of repairs, who, himself, is under the inspector of buildings. The Commission believes that the supervision of janitors should be transferred to the office which has control of the maintenance and repair of buildings and believes it to be, therefore, preferable to transfer the janitors to the inspector of buildings rather than to put the school architect under the board of education. The best solution of all is believed to be that recommended, namely, the creation of a separate commission and the transfer from the office of the inspector of buildings to this commission the responsibility for the construction, maintenance, and repair of the buildings and from the board of education of its control over the janitors.

REPORT OF A FORMER SCHOOLHOUSE COMMISSION.

At this point the commission deems it proper to invite attention to the fact that a quarter of a century ago, a commission was appointed by resolution of the House of Representatives, consisting of Col. John S. Billings, surgeon, U. S. Army; Hon. John Eaton, United States Director of Education, and Mr. Edward Clark, Architect of the United States Capitol. This Commission, in a report largely taken up with the discussion of rented rooms and buildings, of which a large portion of the school accommodations consisted, at the same time reported upon the construction of school buildings. Quotations from that report follows:

The large school buildings that have been erected in the District during the last three years have received careful examination. The general plan of all these buildings is considered fairly satisfactory, and they are superior to some and equal to the average of school buildings in other large cities of this country. They have been as cheaply built as is consistent with the purpose for which they were designed, no money having been used for architectural effect or ornament of any kind.

It is advised that no new building should be erected or any important alterations in existing buildings made until the plans and site selected for such new buildings or the proposed alterations shall have been approved by a board of experts representing the best and most recent knowledge in sanitary science, in pedagogy, and in architecture. Such an important matter as the arrangement of a large school building should not be left to the discretion of a body of men who have no special familiarity with the approved principles of school management, sanitary science, or architecture. It is the opinion of the Commission that the amounts heretofore allowed for repairs in the school buildings have been economically used, but that they have been insufficient to meet the current wants.

The Commission has carefully considered the existing wants of the District for additional school accommodation. Looking at this side of the question only, it would appear that there is at the present time great demand for additional school buildings. On the other hand the Commission recognize the fact that there are great and urgent demands upon the revenues of the District for other purposes, and more especially for drainage, sewerage, and

for putting the streets into a proper condition, and also that the rate of taxation upon the property owners in the District should be materially if at all increased. It is because this last point has been kept in view that the Commission has refrained from commenting in detail upon the defects which are found in the existing school buildings, even in the best, or from urging the erection of such buildings as would be considered in the light of the combined requirements of modern sanitary and pedagogical science as model schools, since to secure the amount of light and fresh air which should be furnished in such a building necessitates not only a certain increase in cost of construction over that which has been heretofore expended upon school buildings in the District, but also additional cost for their maintenance, more especially as regards heating, since in cold weather the fresh air to be supplied must be warmed, and if the proper amount is supplied the cost for fuel must be increased to correspond. Taking all these things into consideration it is the opinion of the Commission that for the next three or four years at least the sum of $100,000 per annum should be expended in the construction of new buildings upon plans to be approved by a board of experts, as above suggested, and that setting all other considerations aside, it will be much more economical to make this expenditure than to pay the rents of the structures which these new buildings would replace.

In the plans of buildings to be hereafter erected, the Commission consider that the following points should be insisted on, concurring with regard to them with the report on a special committee of award upon plans for public schools, as reported in the Sanitary Engineer for March 1, 1880, with certain modifications relating more especially to the conditions in the District.

1. All sides of the building shall be fully exposed to light and air, for which purpose they shall be not less than 60 feet distant from any opposite building.

2. Not more than three of the floors, better only two, shall be occupied for class rooms.

3. In each class room not less than 15 square feet of floor area shall be allotted to each pupil.

4. In each class room the window space should not be less than one-fourth of the floor space, and the distance of the desk most remote from the window should not be more than one and a half times the height of the top of the window from the floor.

5. The height of the class room should never exceed 14 feet.

6. The provisions for ventilation should be such as to provide for each person in a class room not less than 30 cubic feet of fresh air per minute, which amount must be introduced and thoroughly distributed without creating unpleasant draughts or causing any two parts of the room to differ in temperature more than 2° F. The velocity of the incoming air should not exceed 2 feet per second at any point where it is liable to strike on the person.

7. The heating of the fresh air should be effected by indirect radiation.

8. All closets for containing clothing and wraps should be thoroughly ventilated.

9. Water-closet accommodations for the pupils should be provided on each floor.

10. The building should not occupy more than half the lot.

All of which is respectfully submitted.

(Signed) JOHN S. BILLINGS,
Surgeon, United States Army.
JOHN EATON,
United States Commissioner of Education.
EDWARD CLARK,
Architect, United States Capitol.

It should be here stated that the report of this Commission was of great value in the succeeding years in the construction of school buildings in the District of Columbia. The report was in advance of schoolhouse construction of that time and many of the improvements of the few succeeding years in schoolhouse construction all over the United States can doubtless be traced directly to this report.

This suggests a secondary advantage in the continued permanence of the present Schoolhouse Commission to the people of the United States at large.

Trips of inspection by this Commission, which have covered a great many of the leading cities of the country, have shown that some municipalities are far in advance of others, in questions of the proper construction of school buildings. The Schoolhouse Commission, it is believed, has secured a great deal of valuable data, which is submitted with this report, and it is believed that such data as this should be constantly gathered together and published, and that if this is done, as it doubtless would be by a permanent Schoolhouse Commission, it would be rendered available for distribution and would doubtless be found in a short time to influence the construction of new school buildings throughout the United States.

A draft of the proposed legislation necessary to carry these recommendations into effect is herewith submitted, with the recommendation that it be either enacted as a separate law, or placed at some proper place in the current District appropriation bill.

A BILL To provide for a Schoolhouse Commission for the District of Columbia, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Commission consisting of the superintendent of schools, the Engineer Commissioner of the District of Columbia, and the Supervising Architect of the U. S. Treasury, created by section 11 of the act of Congress approved June 20, 1906, entitled, "An act to fix and regulate the salaries of teachers, school officers and other employees of the board of education of the District of Columbia," for the purpose of submitting to Congress plans for the consolidation of public school buildings, and other purposes, be, and the same is hereby, made a permanent Commission, with the powers and duties hereinafter provided for: *Provided*, That no member of said Commission shall receive any additional compensation for performing said duties other than that which he is now receiving by law.

SEC. 2. Said Commission shall have charge of the construction, repair, maintenance, and furnishing of all public school buildings now or hereafter erected in the District of Columbia, including the appointment of janitors, enginemen, and firemen, and shall have authority to purchase or initiate proceedings to condemn ground as sites for school buildings when appropriations therefor are made by law, and of the preparation of plans for and the construction of school buildings on such sites, under appropriations made for that purpose.

SEC. 3. Said Commission is hereby authorized and directed to appoint a school architect at a compensation of $3,600 per annum, whose duty it shall be, under the direction of the Commission, to prepare plans and specifications for

school buildings and to perform such other duties as may be assigned to him by said Commission, and said Commission is further authorized to appoint architects, draftsmen, and such other employees as may be necessary, in its judgment, to carry out the purposes of this act and to dismiss such employees at its discretion, and all of the duties now placed by law upon the inspector of buildings of the District of Columbia, the superintendent of the Capitol building and grounds, and the Commissioners of the District of Columbia, with reference to the preparation and approval of plans and specifications for school buildings, and the construction of same are hereby transferred to and vested in said Commission.

SEC. 4. The board of education of the District of Columbia is hereby directed to report to said Commission, from time to time, the necessity for the purchase of sites for new school buildings, which report shall describe generally the territory within which such site should be selected and the character and size of school intended for such site, and it shall be the duty of said Commission, either by purchase or condemnation, to acquire such site or sites from any appropriation or appropriations which may be available for the purpose as nearly as may be practicable in the order certified to said Commission by the board of education.

SEC. 5. That it shall further be the duty of the board of education to prepare, from time to time, in writing, for the direction of the said Commission, a list of school buildings to be erected upon sites already secured or in process of being secured by condemnation proceedings, and it shall be the duty of said Commission to prepare plans and specifications for a building or buildings to be erected on said sites as nearly as may be practicable in the order certified thereto by the board of education, and to advertise for bids for the erection of such building or buildings as required by existing law, and to enter into contract therefor: *Provided*, That an appropriation or appropriations are available for said purpose.

SEC. 6. That hereafter appropriations for the purchase of sites for and the construction of public school buildings shall be made in separate lump sums to be disbursed under the direction of said Commission, in accordance with the provisions of this act, and it shall be the duty of said Commission to make allotments from said appropriations for the purchase of sites and the construction of school buildings thereon.

SEC. 7. It shall be the duty of said Commission to disburse all sums appropriated for the repair and maintenance of public school buildings, and for furniture therein, upon requisitions made by the board of education of the District of Columbia: *Provided*, That said Commission shall have full power to approve or disapprove any requisitions which may be submitted to it by said board of education.

SEC. 8. It shall be the duty of said Commission to report to Congress annually, through the Commissioners of the District of Columbia, the number of sites purchased and the cost thereof, the number of school buildings erected and the cost thereof, and the amount expended in the repairs, maintenance, and furnishing of school buildings, and said report shall be made in detail, and it shall also be the duty of said Commission to submit to Congress, annually, through said Commissioners of the District of Columbia, estimates for the purchase of sites, the erection of school buildings, and the equipment of same, and for the maintenance and repair of school buildings.

SEC. 9. That all disbursements of said Commission shall be upon vouchers audited by the auditor of the District of Columbia and paid by the disbursing officer of said District, and upon requisitions to be approved by the Commis-

sioners of the District of Columbia, as now required by law for appropriations made for the expenses of the government of the District of Columbia.

SEC. 10. That all duties placed by this act upon said Schoolhouse Commission which are now performed by any other officer or employee of the District of Coumbia shall be performed by said Commission, and such officer or employee is hereby relieved from all such duty or duties.

SEC. 11. That all laws or parts of laws inconsistent with the provisions hereof are hereby repealed.

SIZE OF APPROPRIATIONS.

At this point it seems desirable to the Commission to make some recommendations in regard to the size of the appropriations. It is recognized that the expenses of conducting the public school system in Washington are probably higher than possibly in any other community, whether measured either by the amount expended per child enrolled, or by the amount expended per 1,000 of residents of the District. The Commission believes that changes in the organization might be made to work economies in this respect, but that so long as separate systems of education of the two races are maintained and an equality maintained in all respects between the two systems (and it is believed no other treatment is possible here), the expenses must be greater than in other places. It is, however, certain, that Washington has not been spending as much money in the construction of new buildings as have most other progressive cities of the country. The type of construction should be better than that used, and this can be said without criticism of the buildings erected in Washington recently, which, as a rule, are excellent solutions of the problem where appropriations are not sufficiently large to permit of fireproof construction. Within the past ten years the total of appropriations for new buildings, including the purchase of sites, has been about $2,850,000. In the fiscal years 1901, 1902, 1907, 1908 only did the appropriations for new school buildings and sites exceed $300,000. It should also here be noted that this period of ten years has seen the erection in the District of two of its high schools, besides the Armstrong Manual Training School. It is believed by the Commision that in these ten years the District has fallen behind in the construction of new buildings to the extent of at least $2,000,000 and that there exists now an immediate need for new construction to meet this defect, a need which should be remedied by as liberal appropriations as possible for the succeeding two or three years. It is also believed that the growth of the District demands a yearly appropriation for new buildings and sites of about the size of the appropriation made for the fiscal year 1908, or lacking the appropriation of a single definite amount to make up the deficit acquired by the partial neglect in the past, that the appropriations for the next few years should be considerably in excess of $500,000 until the school

needs are supplied. The Commission believes that an authorization in new school buildings and grounds for the fiscal year 1909 of about $1,000,000 should be made, and that about the same sum should be appropriated for each of the three or four succeeding years, after which time a normal basis will be reached of about $600,000 per year for new buildings and from $100,000 to $150,000 a year for repairs to buildings, to plumbing, and to heating and ventilating apparatus. These figures are based on an authorization or requirement of a better class of construction in the building. Most of the latest buildings in the District are not fireproof and are built at a cost of about 11½ cents per cubic foot. It is believed that the type of construction should be raised to a cost of about 17 cents per cubic foot, the cost decreasing for the larger buildings. This contemplates fireproof construction, up to the ceiling of the top floor.

TYPICAL CLASS ROOM.

In the District of Columbia the class room in the buildings erected in recent years are 24 to 25 feet by 32 or 33 feet. Ceilings are 13 feet high. This room contains about 250 cubic feet per pupil on the average attendance of 42 pupils per room and a lesser quantity for 50 pupils per room.

The rooms should be provided with ventilation, so that at least 30 cubic feet of fresh air per minute would be provided for each pupil, and this amount should be introduced and distributed without unpleasant draughts, thereby giving a complete change of air in the room in seven or eight minutes, a condition which it was entirely impossible to obtain under the old methods of ventilating. A room of this size allows for the proper spacing of 48 desks with sufficient aisles to the teacher's desk. The plan of the desk layout of the rooms in Boston appended with this report has been deemed worthy of reproduction and careful note. Adjacent to each room in modern school buildings there should be a cloak and hat room about 6 by 20 feet, affording sufficient space for the wraps and umbrellas for about 50 pupils, and also teacher's bookcase. There is divided practice as to whether this cloakroom should have a single entrance from the schoolroom or an entrance from the schoolroom and an entrance from the corridor. In the Washington schools the rooms serve as passage ways between the schoolroom and the corridor, so that when classes are dismissed pupils obtain their wraps as they march from the rooms and thence into the halls or corridors without returning to the class room. In the St. Louis schools and in the Boston schools, rooms are provided with but 1 door, but these buildings are fireproof buildings. It is believed that unless the buildings are fireproof, which they are not in Washington, the extra exits to the room should be provided, as is done here. These cloakrooms are genally ventilated

and always should be to assist in the drying out of the wraps on rainy days. In St. Louis the exhausts of the ventilating system are provided in these rooms. This has the slight sanitary objection that the drying air is always more or less impure, but seems to be more practical than to attempt to install a separate ventilating system for the smaller room.

LIGHTING.

The windows of the schoolroom should be of such size to give an area of at least one-fifth, preferably one-fourth, of the floor area of the room. Unilateral light, as far as light itself is concerned, is naturally the best system that can be devised. The light should come from the left and rear. The sills of the windows should preferably be above the heads of the sitting pupils, the top of the window close to the ceiling, not more than 8 inches therefrom. The ceiling should be either white or of a light enough color to reflect downward the refracted rays which are secured by closing the upper half of the window sash with ribbed glass, the ribs running horizontally. This treatment is found better than frosting the glass, which obstructs or moderates rather than refracts the light.

In Washington the unilateral light principle is not ready for rigid adoption for climatic reasons. Many days in the year are so hot as to make it necessary to have the windows open and the conditions are much better with openings for this ventilation on two sides of the room than could possibly be obtained with windows on one side only. Where the light is bilateral it should be so arranged that the greater amount of light comes from the left and the smaller amount from the rear. In such a case the area put into windows should be greater than that required for the unilateral light, so that the sunny side may be shaded without reducing the amount of light below the standard. Such shading should be attained by a translucent or very slightly opaque shade. The great objection to unilateral light, which is adopted in many cities, even when bilateral light might be obtained, is that in order to obtain the necessary amount of sash space practically the whole side of the room must be given up for windows. On the windows facing east, west, or south at some time of the day, the direct rays of the sun will fall on the desks of the pupils and the entire window must be shaded, thereby reducing the amount of light below the standard.

The Commission believes that the system here of designing for unilateral light where bilateral light is not attainable and of taking advantage of the bilateral light where it can be obtained to augment or supplement side light when it is necessary to shade the side windows is justifiable and that to adopt a rigid adherence to the unilateral system here would be a mistake and recognized as such during

the hot days which occur every year in May, June, and September, during school session.

Relative to the size of the panes, the Commission favors small panes for economy in repairs. Shades are recommended to be of about the transparency of tracing linen, so that the direct sunlight can be shaded without a great reduction in the light. The shades for the rear windows, however, should be more nearly opaque and should be hung at the top of the window.

HEATING AND VENTILATION.

The system now universally most favorably regarded for both heating and ventilating is to heat the air which is supplied to the rooms for ventilation purposes, the air being introduced to the interior wall of the room at a distance well above the floor through an opening large enough to supply the necessary quantity without excessive currents. The outside air enters the fan room through screens, is forced by the fan over coils or furnaces to the warm air chamber, thence through ducts to the rooms. The air in passing the heating surfaces is raised to a temperature of between 150° and 175°, but loses about 50° between the boiler room and the class room, which it enters at about 100°. The air is delivered in a slightly upward and outward direction, so that it spreads over the ceiling and comes in contact with the large window surfaces, where it is perceptibly cooled and drops near the windows, so that by the time it reaches the lungs of the pupils it is cooled to about 70°. The vent register should be placed near the floor and on the same side of the room as the inlet register. The air is exhausted at a temperature averaging 60°. Part of the outgoing air is forced through the cloakroom adjoining the class rooms. About 1,600 cubic feet per minute of air should be supplied to each class room, this being an allowance of about 30 cubic feet per minute to the pupil. The amount can be increased or diminished by regulating the speed of the fan and the temperature can be controlled by opening or closing the damper in the by-pass or cold air duct connected with each hot air duct in the basement. Thermostatic or automatic control can be installed, or the dampers can be arranged for hand control by the engineer or janitor. The latter system affords opportunity for sudden changes after physical exercises of the pupils without making it necessary to open the windows.

In the northern cities it is necessary to have steam radiators in the rooms in addition to the heat ducts, in order to keep the rooms from cooling off over night. This is not believed to be necessary in this climate, where the rooms can be quickly heated by using a return duct, so that the cold-air supply may be shut off and the tempered air of the building circulated before the opening of the school in the

morning, the return duct being cut out on the entrance of the pupils and the fresh air introduced. Of course, in this system it is necessary that the ventilation of the toilet rooms shall be independent of the house system and that all ducts with vents from the toilet rooms discharge above the roof.

BLACKBOARDS.

The Commission finds various types of blackboards in use throughout the United States, from a blackboard of hard plaster treated with a coat called silicate to boards made of black glass, all of which have advantages and defects. The blackboards of hard plaster coated with so-called silicate require to be recoated every two years. During this time they remain permanently black, while the commercial slate, which verges on dolomite or limestone, turns to a gray color and can not be kept black, their cost being such that the artificial board, with its recoating, will not reach the first cost of the slate board, until possibly twenty years. The black-glass board is the ideal board, remaining permanently black, never needing repair and being practically indestructible. It is, however, extremely expensive. The Commission believes that the blackboards of plaster coated with silicate are eminently satisfactory and probably the most economical boards that can be devised.

The chalk rail is placed about 2 feet 5 inches above the floor and the top of the board should not exceed 6 feet 6 inches. A good finishing detail is to have a picture or dish shelf at the top of the board, with a panel for the insertion of drawings or unframed pictures; and, as is found in the St. Louis schools, with a soft-wood strip built into the wall about 1 foot above the shelf, for the easy fastening of these drawings or prints.

PLUMBING.

In a building of 2 floors and a basement toilet rooms for the pupils need be provided only in the basement. In high schools or in buildings where there are 3 floors above the basement, a toilet room should, preferably, be provided on each floor, and 1 should, without doubt, be provided for the top floor in addition to the toilets in the basement. Teachers' rooms, with toilet facilities, should, however, be provided on every floor and a separate small toilet room should be provided for every class room intended for kindergarten purposes. The Commission believes that the latest school buildings in the District of Columbia have very satisfactory toilet arrangements in their basements. As to the number of toilets to be provided, about 1½ closets per room in the girl's toilet room and about 1 closet per room in the boy's toilet room, with about 30 inches of urinal space per room in the latter room, or 1¼ urinal fixtures per class room, should be provided.

Fixtures used in the Washington schools are of the most advanced and sanitary type. Closet fixtures are seat action, with copper-lined tanks. Seats are reenforced with brass strips and flush pipes are of nickel-plated brass. Closets are vented in range and each has a register vent in the wall in the rear of the closet opening into the vent chamber to take off the local odors. Bowls are of extra heavy vitreous earthenware with siphon jet washout. Floors of the toilet room are of cement, with a brass floor drain for flushing or washing. Urinals are set out in the middle of the room, with slate stalls, double back, with an interior vent space connected to vertical vent duct with Bunsen burners to accelerate the draught. The floor slab and trough are also slate. The top of the urinal is provided with a water trough with serrated edges over which the water flows in a sheet down the face of the urinal back. In its many inspections the Commission saw no other urinal fixture that could compare with this one for efficiency.

Drinking fountains in Washington are of the fountain type, either with constantly flowing water with a nozzle or mouthpiece over which the pupil puts his mouth, or with an attachment or handle to turn or press down to start the flow. Both have objections, the former wasting water and the latter failing to keep itself constantly cleansed. It is questionable whether this fountain should not be replaced by a sink, either of deep enamel or vitreous ware, with porcelain drinking cup hung on a stout chain in such a manner as to drain when released. In St. Louis a special note was made of the drinking fountains in the walls of the building, on the outside, available for the children during the play period.

Iron sinks should be provided for the janitor and in the lavatories for the pupils and teachers.

The Commission calls attention to the fact that the problem of keeping in repair the plumbing fixtures in school buildings is a very serious one. No effort should be spared to reduce the mechanism of the plumbing fixtures, so as to omit all parts liable to be damaged, and they believe that an earnest effort to this end is being made in practically all cities visited, as well as here in Washington, and that great progress is being made along these lines and can be expected in the future.

AIR MOISTENING.

With reference to the moistening of air in the schools, the Commission believes that this moistening is desirable, but is not prepared to state that the problem has as yet reached the best solution in any municipality. It is believed that it would be entirely proper for experiments to be tried to see if results could not be obtained that would justify the general use of moistening apparatus, both on ac-

count of its effect on the health of the children and because in some solutions of the problem in the process of moistening the air, the air is also washed and enters the room purer and cleaner than without the washing. A very good illustration of this was seen by the Commission in its inspection of the Patrick Henry School at St. Louis, where all of the air entering the building through the ventilating system is drawn in through a spray bath, which cools the air in summer and provides moisture, although the spray is installed to cleanse the air.

In this connection the Commission deems well worthy of quotation a portion of the report of the schoolhouse commissioners of Boston for the year 1906, showing the results and conclusions arrived at by the Boston authorities in their efforts to treat this question.

We respectfully submit a report on air moistening in the schools as per your request.

The tests which have been made are confined to 2 schools, the Farragut School, Huntington avenue, and the Andrews School, Genesee street. These tests were partly made last year and continued this, with a view to determining the following questions:

1. How high a percentage of moisture is desirable?
2. Can a given percentage be maintained?
3. How much attention is necessary to maintain the desired percentage of moisture?

Without going into details more than is necessary we will try to answer these questions.

The answer to the first one would be that from 40 to 50 per cent is desirable in cold weather. It was found that, while on mild, bright days, even a higher per cent than 50 was permissible, on cold days it was objectionable in some rooms.

The moisture in the Andrews School was presumably equally distributed to the various rooms. On the sunny side with 50 per cent moisture there was very little condensation on the windows. On the shady side it was objectionable, and the teachers complained of a dampness in the air. This was probably due to the extra cooling of the air next windows and walls on the shady side, which tended to raise the percentage of humidity in part of the room to perhaps 70 per cent or more.

Considering buildings, then, as a whole, about 40 per cent humidity in very cold weather and 50 per cent in ordinary winter weather seems about right.

To determine the answer to the second question we have tried to control the percentage by means of humidostats.

The apparatus used is briefly described as follows:

A fan and radiators controlled automatically to deliver air to the rooms at a uniform temperature of 67° F. (This particular school has steam coils in the room to make up the necessary heat over what enters with the air to rooms.) Steam pipes perforated to blow steam directly into the air entering; a valve on supply to pipes to control flow of steam; a humidostat in the schoolroom to control automatically the valve on steam supply pipe; a recording hygrodelk to record the per cent of moisture in the rooms.

The records show that the humidostat did open and close the valve, so that there was a per cent ranging about 5 points each way above and below the set point when the apparatus was properly run. Greater variations are recorded,

but a cause can be given in nearly every case. The experiment is limited to 1 humidostat, and how permanently reliable humidostats would prove is not determined.

The third question is an important one and can only be answered in a general way.

With the present state of the development of this apparatus for this work a great deal of attention is necessary. The simplest method and least expensive to install for the average building is the one at the Andrews School. It is the nearest to a scientific system, as it attempts to control the percentage of humidity in a simple way.

Two phases have been developed which tend to show that special care is needed, and they are as follows:

First. So much steam taken from the boiler requires constant care to see that the water line does not get down to the danger point.

Second. There has been complaint of a bad odor in the rooms, and this was due to the sediment and dirty water in the boilers.

There is a question of whether the water can be kept sufficiently clean in the boilers to obviate this.

The alternative of having a pan of water, with submerged steam pipes and air passing over the surface on its way to the rooms, has advantages, but this water pan would have to be kept clean, and there are many places where it is not practical, on account of the space required.

The situation, we think, is fairly stated by saying that the humidifying of schoolrooms is practical and can be regulated, but the results with the average janitor, due to the attention necessary, are not commensurate with the expense and maintenance of the installation.

PLAY ROOMS IN BASEMENT.

All school buildings should be provided with 2 large play rooms in the basement floor, which preferably should be on a level with the play yards, 1 room to be available for each sex during such weather as requires children to spend their play period indoors. Such rooms, to be most attractive, should be faced with vitrified or glazed brick, or a dark colored paving brick to a height of at least 6 feet, the surface to be such that defacement by writing or drawing with pencil or chalk is impossible. Floors, in most cases, should be of cement. Rooms should be furnished by a low bench or settee taking a very small portion of the space next to the wall; and each play room should have every convenient access to the toilet room for that sex for which the room is intended.

PLAYGROUNDS.

The Commission can not lay too much stress on the desirability of the acquisition of large enough lots to provide ample playground space for children during recess. This should be easier to attain in Washington than in the larger cities, although even in Chicago and St. Louis this idea is carried out, in St. Louis even in the well-built up sections of the city. The school laws of most cities provide that there shall be 20 feet of floor space for each school child in all build-

ings. It would appear that more than this space should be provided for play space and the Commission believes that 30 square feet per pupil should be provided in addition to the area of 2 large play rooms. Where possible this allowance should be increased to 40 square feet per pupil, and should never be allowed to fall below 25 square feet.

Attention is invited to the playground arrangement of the Bernhard Moos School, in Chicago, elsewhere described in this report, and to the playgrounds which are provided generally in the St. Louis schools.

In Washington, it is believed that the building should be set as close as possible to the building line, as this will leave, ordinarily a small parking space in front for such architectural treatment as may be desired, and will result in effecting the preservation of every possible inch of the rear space for playground purposes.

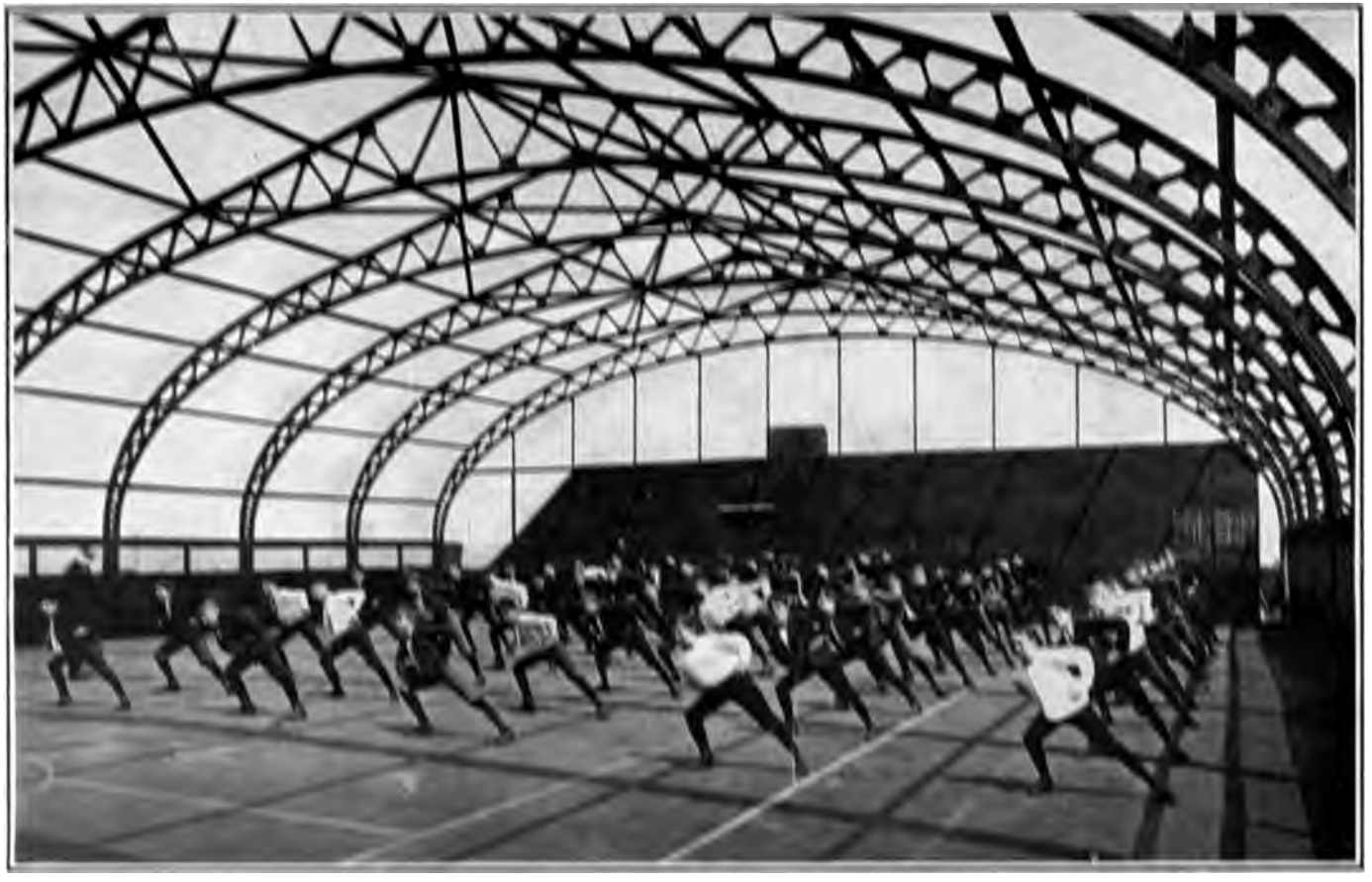
In the St. Louis schools it was noticed by the Commission that where the normal playground space was small the terrace in front of the building was reduced in size to comparatively little more than the width of the main entrance, but where the lot was of normal size, or larger, this terrace was extended to almost the entire length of the building.

In Washington, especially in the older schools, playground space is notably deficient. Instead of an 8-room school having 12,000 square feet of play space, not a few such have scarcely 1,000 square feet. It does not appear advisable for the Commission to specify in connection with what particular buildings there should be provision for additional playgrounds. About half of the buildings should have additional playground accommodations. The Commission recommends an appropriation of $200,000 in order to acquire for certain selected schools, as far as this amount may go, additional playgrounds, and that in future appropriation bills provision be made for the playground extensions to other schools, until every elementary school in the District of Columbia shall have a proper playground.

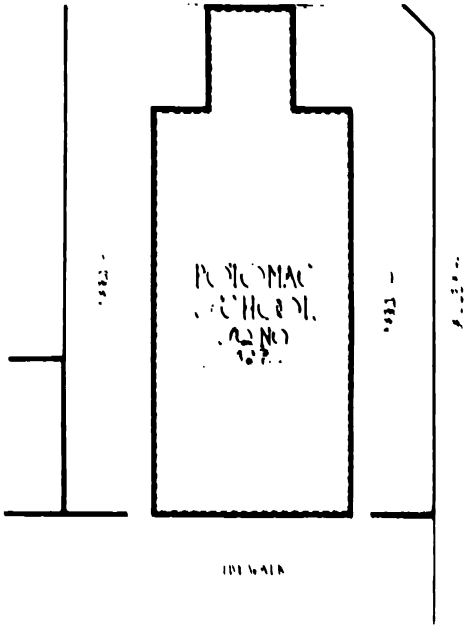
GYMNASIUMS AND ATHLETIC FIELDS.

Of the white and colored high schools of the District of Columbia only 2—the Business High School and the Western High School—have gymnasiums worthy of the name. The Eastern and Central high schools have drill halls used for such purposes. The Commission would recommend that all new high schools be equipped with gymnasiums that may accommodate classes of at least 80 pupils at a time. Where possible there should be 2 gymnasiums, 1 for pupils of each sex.

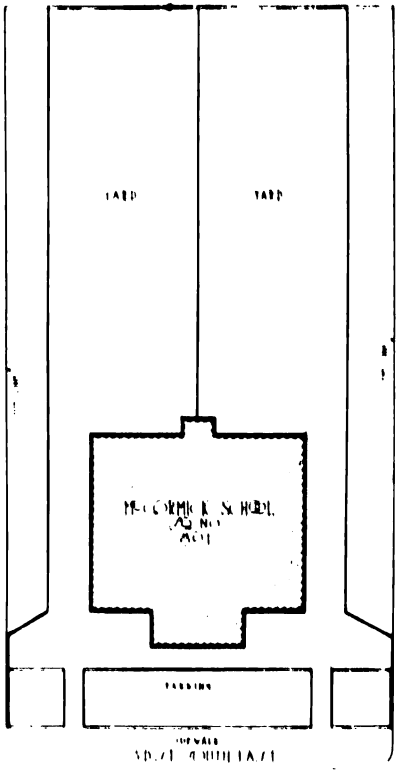
Only one high school in the District—the Western—has sufficient accommodations for athletic outdoor sports. The Commission does



ROOF PLAYGROUND NEW YORK [illegible] SNYDER, ARCHITECT



POTOMAC SCHOOL, WASHINGTON, D. C.



McCORMICK SCHOOL, WASHINGTON, D. C.

not regard it as feasible to purchase grounds near each high school, but would recommend that 2 large athletic fields be secured at some convenient point within the District—1 for white youth and the other for colored youth. The Commission would suggest a field of about 8 acres. It is possible that some such accommodation as this might be obtained by utilizing a portion of the newly reclaimed Potomac Park near the end of the new highway bridge across the Potomac.

ASSEMBLY HALL.

The Commission notes that there are assembly halls in the schools of most of the progressive cities of the country. Assembly halls should accommodate from 600 to 1,000 persons. In order to make the hall available for night lectures as well as for use in instruction of the pupils, the best location of such halls is either on the ground floor or in the basement of the buildings. Attention is called to a school described later in this report—a school in Rochester, N. Y., which is provided with an assembly hall, which is so inexpensive and yet so convenient that it commends itself for use here. This kind of assembly room can be incorporated in plans for schools on either the "U" or "E" type. Another good type, which, however, calls for the sacrifice of class-room space in the main building, is the one shown in the new plans for school in New York City, submitted later in this report.

SCHOOLS TO BE ABANDONED.

The Commission recommends in the following specific cases immediate abandonment of some properties and ultimate abandonment of other properties; in some cases the sale or disposal of the lot and in some cases the use of the lot, together with property to be acquired as a site for a new building, or the use of the lot without increase in size, for the establishment of a smaller building, such as a manual training center.

POTOMAC SCHOOL.

This building was built in 1870 at Twelfth street and Maryland avenue SW. It is badly located on account of its close proximity to the railroad tracks and it occupies a very small lot, with a small narrow yard at either side, as shown on the plate. It is only in fair repair and is almost entirely unsuitable for school purposes. The Commission recommends that it be replaced as soon as possible by a modern school building in this general locality, but at a different point.

M'CORMICK SCHOOL.

This building was built in 1870, on Third street SE., between M and N streets. It occupies a fair-sized lot, but is not at all suitable

for school purposes, having narrow halls, no teacher's rooms, is deficient in ventilation and has no modern plumbing. A modern school building is being located at another point in this section. This building should be abandoned as a grammar school and used for a short time for manual-training purposes, to which it is better adapted. At a later date a manual-training center in a new building should be here located.

THOMSON SCHOOL.

This building was built in 1877, on Twelfth street, between K and L streets. It is a small and narrow 4-story building, badly heated, has no adequate ventilation, is badly located on the lot, which it almost entirely occupies, leaving no yard space. It should be entirely abandoned at once. The Commission regrets that in its various inspections no time was available to search through poorly arranged and old school buildings, as it would have been interesting to have determined whether as unsuitable a building as this could be found, in use for schools purposes, in any up-to-date municipality. This site might well be utilized for the location of a manual-training center, if difficulty is found in acquiring sufficient adjacent property for a larger school.

THRELKELD SCHOOL.

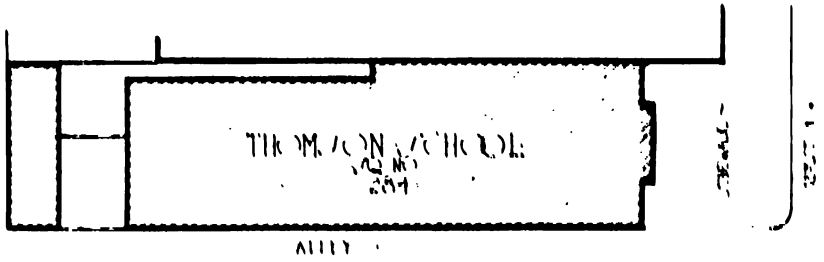
This is an old building erected in 1868 at Thirty-sixth and Prospect streets NW. It is well located at the corner but is on an extremely small lot. The building is an old brick structure, badly arranged as a school building, the lighting being exceptionally bad, being from opposite sides of the room in some cases and in others on three sides. The building should be abandoned and the lot sold, or additional adjacent property acquired for the erection of a modern school.

WEBSTER SCHOOL.

The Webster School is an old building erected in 1884 at the corner of Tenth and H streets NW. It is well located as to school neighborhood, but is on a bad lot, the east wall abutting another building and a very small yard remaining for recreation purposes. The light in several of the schoolrooms is of the worst possible type, coming from both the right and left sides of the students. Although the building is in substantial condition, it should be abandoned for school purposes and the site disposed of.

ABBOTT SCHOOL.

This is an old building, built in 1876 on a triangular lot entirely surrounded by streets at Sixth and New York avenue NW. The school is well located, but is entirely lacking in playground space. The building is in good repair, having recently been thoroughly overhauled. It is, however, of an old type, not well lighted. It is rec-



THOMSON SCHOOL, WASHINGTON, D. C.

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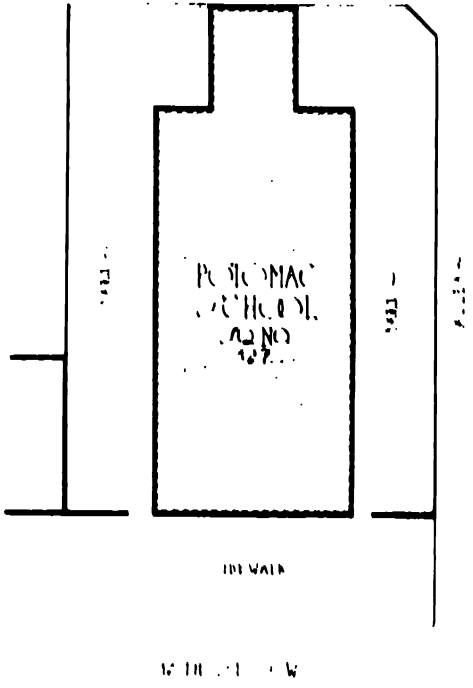
WEBSTER SCHOOL, WASHINGTON, D. C.



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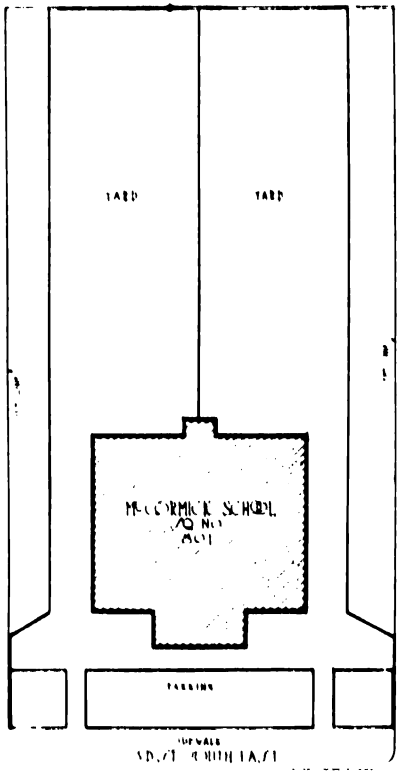

McCORMICK SCHOOL, WASHINGTON, D. C.

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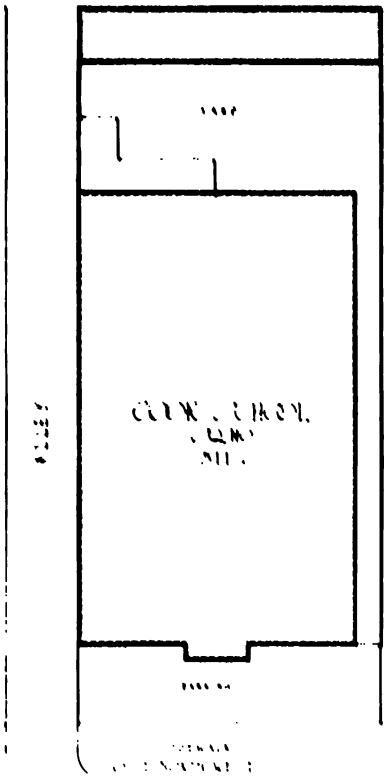
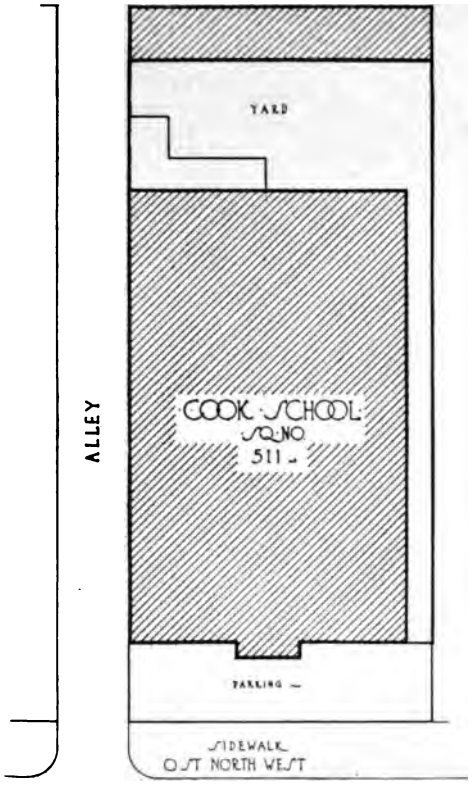


J. F. COOK SCHOOL, WASHINGTON, D. C.



J. F. COOK SCHOOL, WASHINGTON, D. C.

ing school center. It is on a triangular corner. The building should be destroyed and the location used for the erection of a small manual training school center and playground.

HILLSDALE SCHOOL.

This is an old frame building erected in 1871 on Nichols avenue, Anacostia. It is poorly located on the lot which it occupies, being lower than the road which it faces. It is ill-fitted for school purposes, leaks badly, and is not in good repair, and is not provided with modern plumbing. Very little of the maintenance fund has been expended on it since the erection of the Birney School, about 3 squares away, some years ago. It should be abandoned and the property disposed of.

LINCOLN SCHOOL.

The Lincoln School, erected in 1871 at Second and C streets SE., is an old building—a colored school—some distance from the pupils attending. The lot is too small, especially on the sides, restricting light. The light is poor, particularly in the mansard. The boys' play room has been given up for instruction purposes. This building should be abandoned and a colored school established to replace it nearer the center of the colored population.

BUNKER HILL SCHOOL.

This building is located too far from colored settlements and should be farther south. It should be rebuilt at a different location and the property disposed of. Several years ago an appropriation was made for building a 4-room school on the present lot, which is too small for that purpose. There is not sufficient appropriation to build a 4-room school and purchase additional ground. It is believed that a 2-room school will be sufficient in this locality, and the present appropriation, with proper legal authority given by Congress, could purchase an additional lot and build a 2-room school at a point half or 1 mile farther south. This is recommended.

FORCE AND ADAMS SCHOOLS.

The Force School, on Massachusetts avenue between Seventeenth and Eighteenth streets NW., was erected in 1880, and the Adams School on R street, between Seventeenth and Eighteenth streets, was erected in 1888. These 2 buildings are both old, but are excellent buildings and in good repair. They are, however, both badly located, as to light, on narrow lots, the Force School having recently had a high modern building built close to its western wall and is liable to have the same in the near future on its eastern wall.

HIGH STREET SCHOOL, WASHINGTON, D. C.

HILLSDALE SCHOOL, WASHINGTON, D. C.

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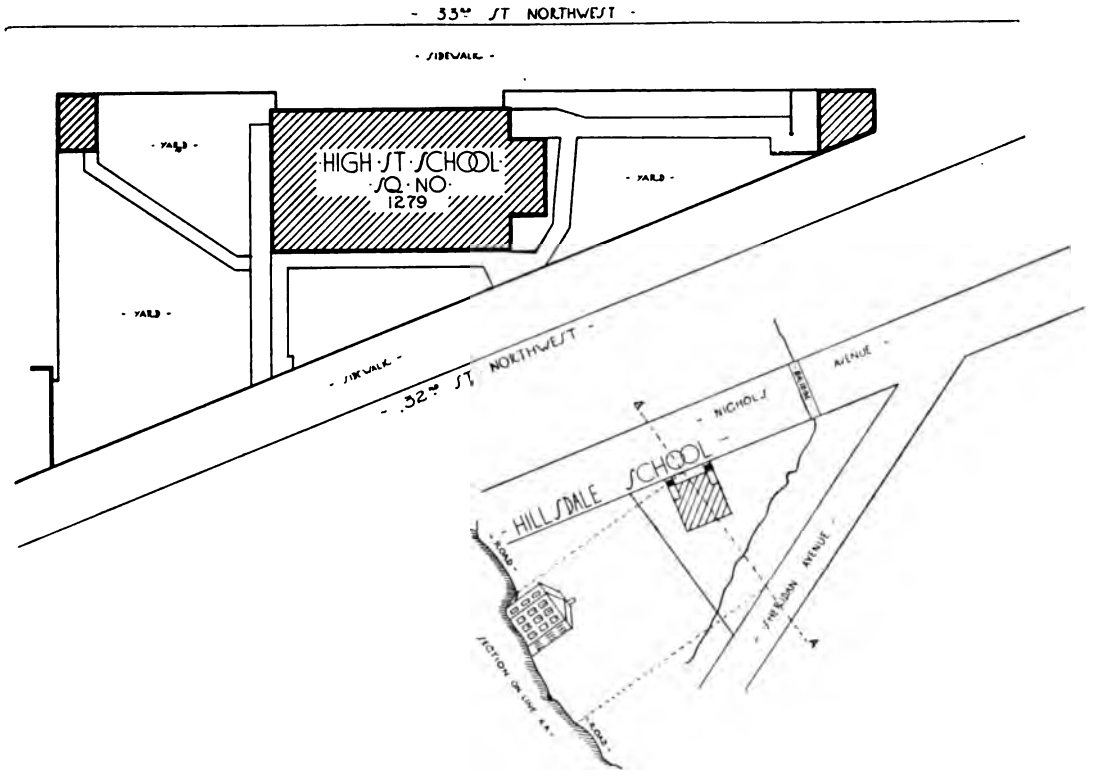
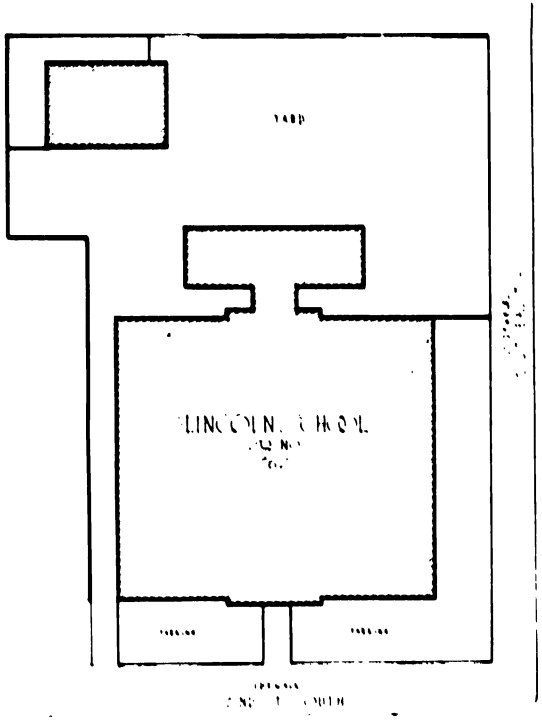


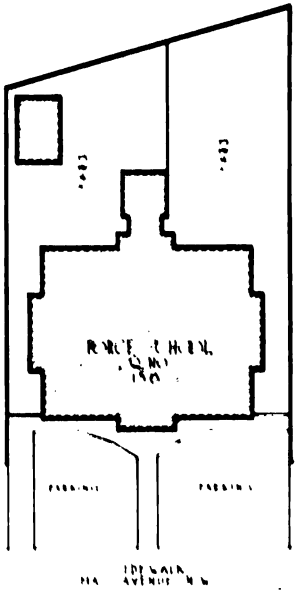
HIGH STREET SCHOOL AND HILLSDALE SCHOOL, WASHINGTON, D. C.

(Lot plans.)

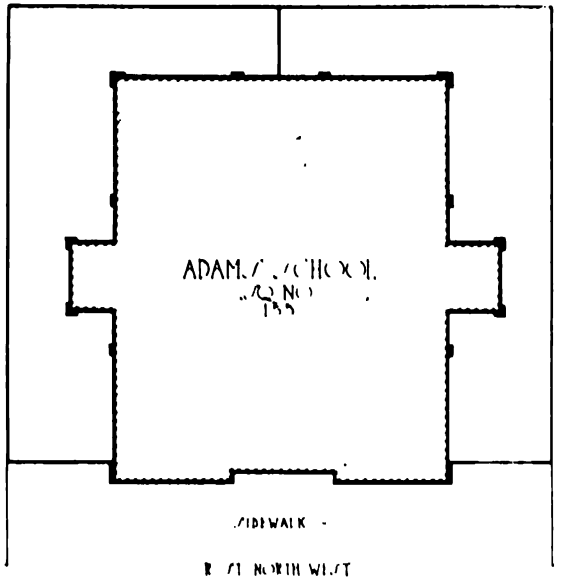


LINCOLN SCHOOL, WASHINGTON, D. C.

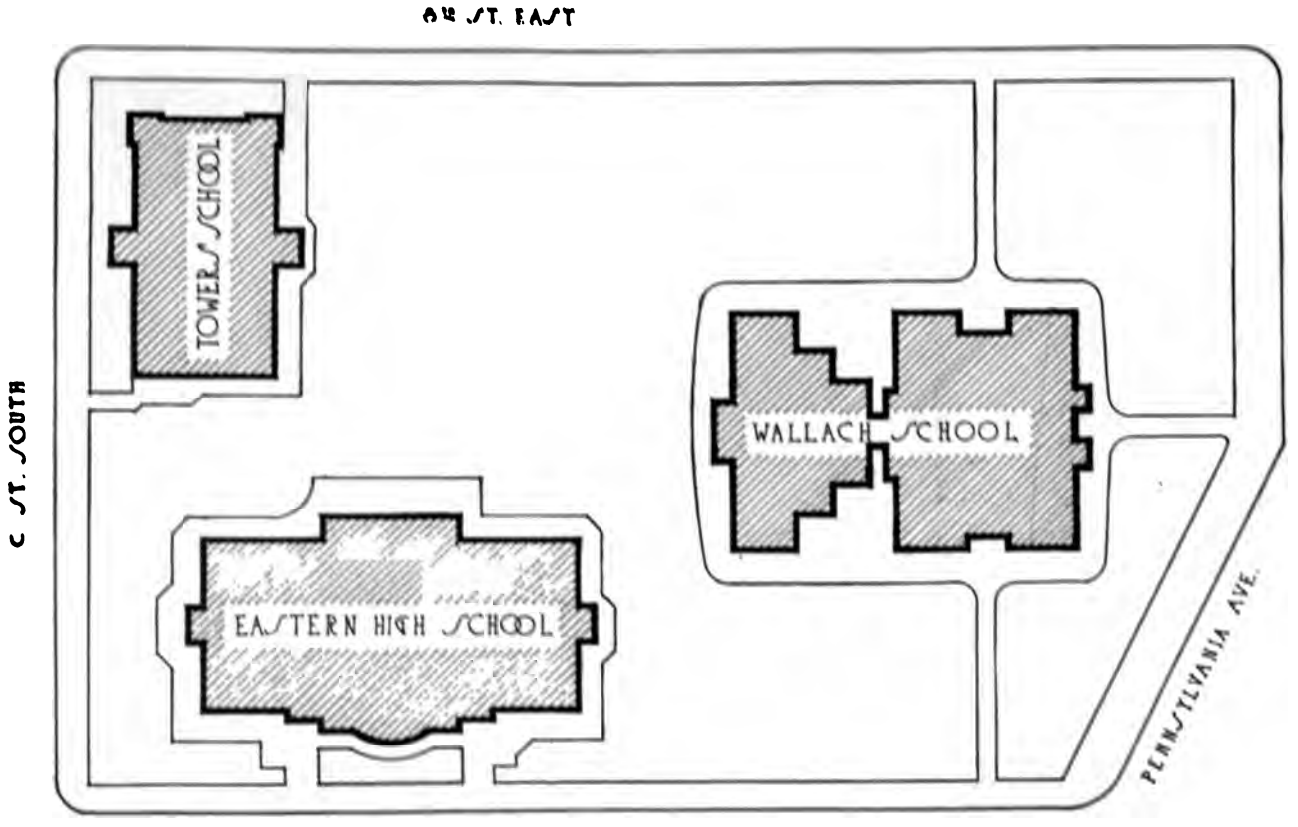
BUNKER HILL SCHOOL, WASHINGTON, D. C.



FORCE SCHOOL, WASHINGTON, D. C.



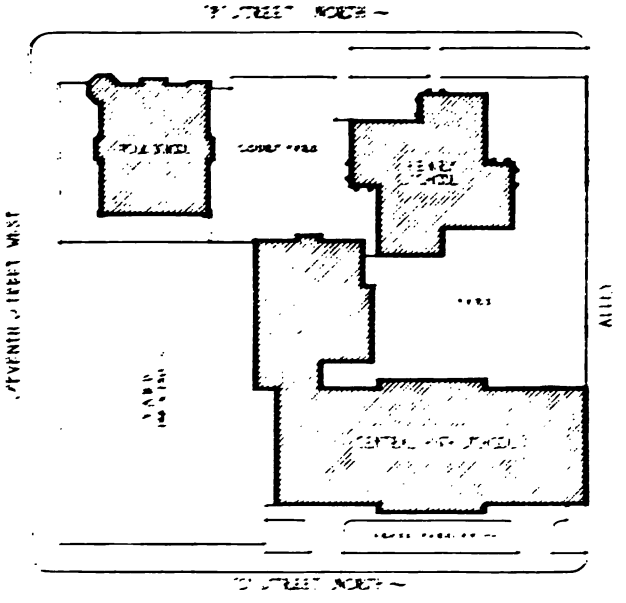
ADAMS SCHOOL, WASHINGTON, D. C.



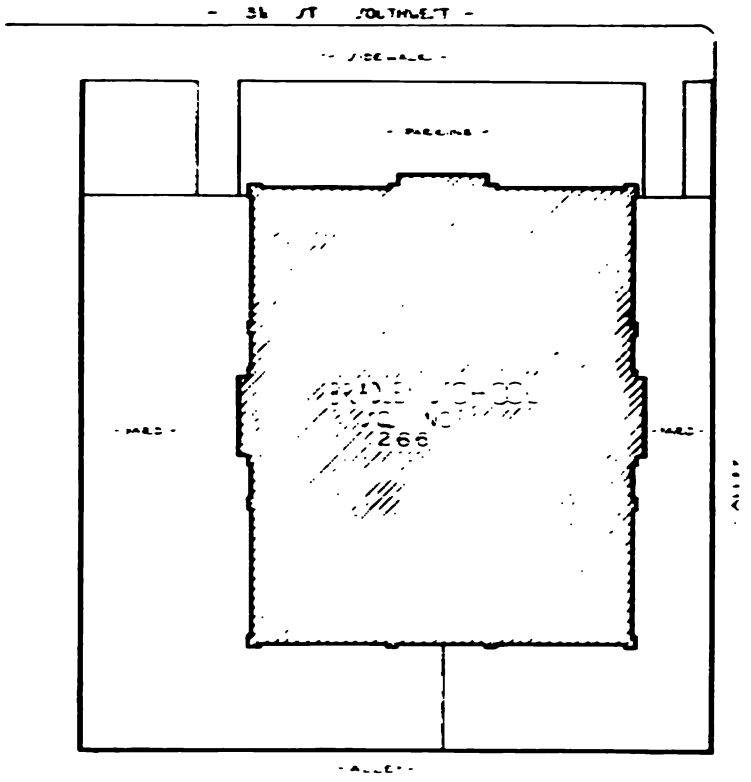
GROUP OF SCHOOLS WITH EASTERN HIGH SCHOOL, WASHINGTON, D. C.

(Lot plan.)

CENTRAL HIGH SCHOOL, WASHINGTON, D. C.



GROUP OF SCHOOLS WITH CENTRAL HIGH SCHOOL WASHINGTON, D. C.



BRADLEY SCHOOL WASHINGTON, D. C.

Lot plan.

The Adams is very poorly lighted for the same reason, especially in the lower story. Both buildings, particularly the Force, are located in a section where property is very valuable and, it is believed, should be elsewhere consolidated into one larger modern building and a portion of the cost defrayed by the sale of the 2 properties. It is believed to be inadvisable to attempt to acquire property to improve the lot and playground space of these schools.

EASTERN HIGH SCHOOL.

This is one of a group of 3 school buildings on practically the same lot (as shown in plate), but is better adapted for grammar school instruction than for high school purposes. It is recommended that the 3 buildings be combined and used as a large grammar school, and that a new Eastern High School be constructed on a site a little nearer the eastern edge of the city.

CENTRAL HIGH SCHOOL.

This building, located on O street between Sixth and Seventh streets NW., was built in 1883. It has a fine location on a good lot, being 1 of a group of 3 schools, practically all on a single lot, the other 2 being the Polk and Henry. The building is a fine old and substantial building, but the plumbing and heating plants are antiquated and can not be replaced without a large special appropriation for such a purpose. The building is very ill-adapted to high school purposes, and is far from satisfactory as to light. It is believed by the Commission that a modern high school should be constructed to take the place of this school a little nearer the edge of the city, preferably at some location in or near Columbia Heights, convenient to both systems of car lines. This school building could then be overhauled, and when combined with the Polk and Henry schools, converted into a group of graded schools, or should it be deemed advisable at that date, a portion of this property might be sold, as it possesses considerable value for business purposes.

BRADLEY SCHOOL.

The Bradley School building, which is located on Thirteen-and-a-half street between C and D streets SW., is poorly located on account of its nearness to the railroad and on account of its very small lot. The building is, however, in good repair and might be advantageously sold for conversion into apartments or similar property. If continued in service as a school additional property should be acquired, both to the north and to the south. The Commission recommends its ultimate abandonment as a school property and the construction of a modern building to serve this section.

GARFIELD SCHOOL.

This school is fairly located on a large lot of irregular shape. The building is old, with small windows, some rooms with objectionable light. It has no plumbing and is heated by stoves. A new and modern building should be constructed on this site.

JEFFERSON SCHOOL.

This is a good building on a fine lot at Sixth and D streets SW., but badly located, being too near the railroad tracks. A new building is recommended on the rear of the present lot at some time in the near future. After the construction of this building the old building should be abandoned and destroyed.

JOHNSON SCHOOL, SCHOOL STREET, MOUNT PLEASANT.

The frame building used for manual training, adjacent to the main school building, should be abandoned.

FRAME COUNTRY SCHOOLS.

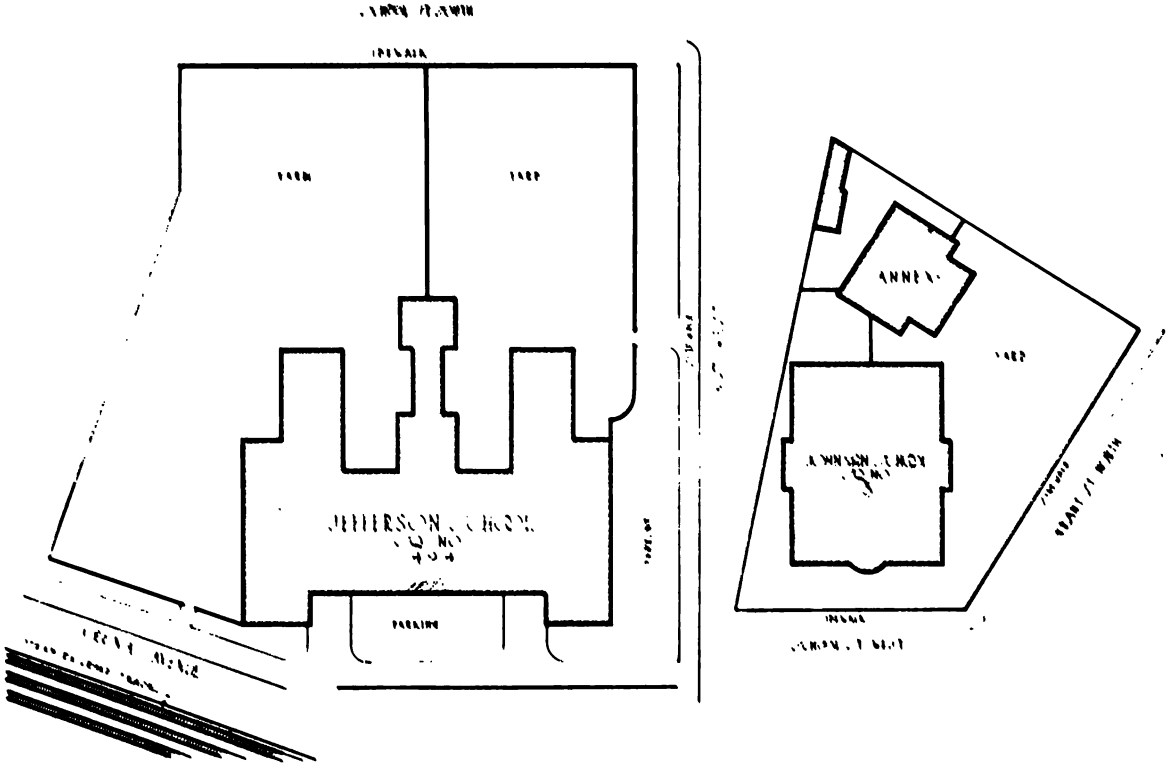
In addition, there are a number of frame buildings, mainly country schools, which should gradually be abandoned and replaced by more modern and better buildings. Among these may be mentioned the school on Bates road, Burrville, Chain Bridge School, school on Grant road near Broad Branch, Ivy City School, school on Rock Creek Ford road, and the Tenley Annex School.

The Commission has prepared plats of most of these buildings, showing the size of the lot and the outline of the building thereon in all cases, many of which will show at a glance that the lot is entirely insufficient for the purpose. Photographic views show the character of many of the buildings, as well as can be shown in such a view.

PORTABLE SCHOOLHOUSES.

The portable schoolhouse is believed to be a necessity in a good school system, especially where there is rapid growth at the edge of the urban section. A type is submitted which has been used in various cities. It is a frame house with its own heating and ventilating system; is collapsible; costs about $1,800 to build and can be taken down and reassembled for about $200. These buildings are set up, one by one, in the school yards, where the attendance overflows the capacity of the building, until relief can be obtained by the permanent extension of the building or the erection of a new building, when the portable houses will be available for similar use in another section. This system is especially recommended for Washington, where, under the system of appropriation for new school buildings,

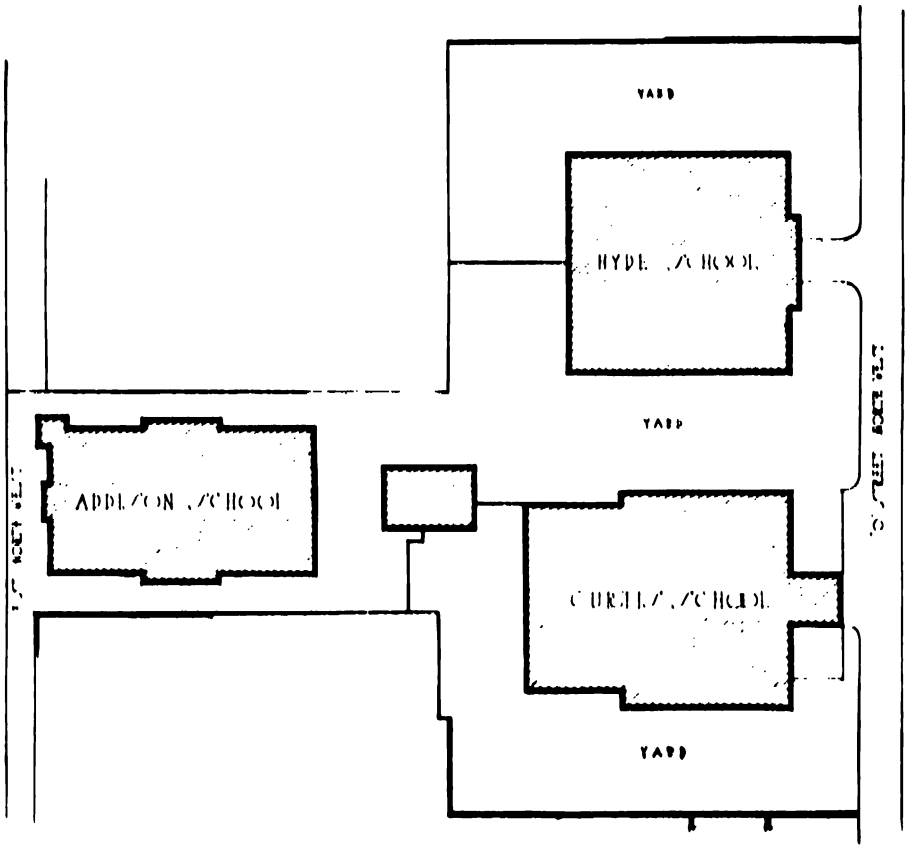
GARFIELD SCHOOL, WASHINGTON, D. C.



JEFFERSON SCHOOL AND JOHNSON SCHOOL, WASHINGTON, D. C.

(Lot plans.)

JOHNSON SCHOOL ANNEX, WASHINGTON, D. C.



GROUP PLAN, ADDISON, CURTIS, AND HYDE SCHOOLS, GEORGETOWN, D. C.

PORTABLE SCHOOL HOUSE, BALTIMORE, MD.

the use of the schoolhouses must be foreseen by the authorities for at least twenty-four months. The Commission recommends an authorization of at least a dozen such buildings, the number to be increased and be kept up by about 12 in each succeeding year, for two or three years.

FIREPROOFING.

The fireproofing of school buildings is not believed to be so necessary in Washington as in other cities, as the fire risk is not here so great. If the building has, however, more than 2 floors the risk of fire should not be taken, but the building should be fireproof. In a 2-story building panic from fire is more to be feared than the actual fire risk, and it is believed that the proper arrangement of stairways will eliminate this risk. There are, however, other advantages in the fireproof construction which would recommend it in all cases. While more expensive at first cost, the expense of upkeep is greatly reduced. The new buildings in St. Louis are exceptionally fine in this respect, and it has been the experience there that not only is the cost of maintenance from ordinary wear and tear less, but the air of permanence, through the pride of the children in the handsome building, causes much less of the malicious defacement than is the case in the cheaper style of construction. This municipality, therefore, goes to the extreme of fireproofing up to the level of the eaves, even for the 2-story building, and, as the illustrations produced elsewhere in this report will show, has achieved notable results.

ESTIMATES.

The Commission submits the following rough estimate of the cost of the constructions recommended in its report:

For site, and erection of a 60-room high school	$525,000
For site, and erection of a new Eastern High School, 40 rooms	320,000
For addition to the Western High School	150,000
For white normal school	250,000
For site, and construction of colored normal school	240,000
For new school buildings—sites and erection	800,000
For 12 manual training centers, purchase of sites for such as can not be accommodated on old sites	45,000
Erection of 12 manual training centers	480,000
For addition to Business High School	80,000
For addition to McKinley High School	100,000
For purchase of additional land at various places (of which $200,000 should be appropriated annually for three years)	600,000
For 36 portable school houses at $1,800 each	65,000
Total	3,635,000

It is not contemplated that all of this work should be done at once, but, as stated previously, it should all be done within not more than five years.

WASHINGTON SCHOOLS.

A brief description of a few of the Washington schools is here given.

B. B. FRENCH SCHOOL.

The B. B. French Manual Training School, constructed in 1898, shows about the installation that is required for a manual training center such as recommended by the Commission. It also illustrates the skillful adaptation to this end of a very restricted site. The lot is L shaped, on a corner, and practically the entire space is occupied by the building. In the basement a large storeroom is provided, and opposite the hall, the fuel, storage, engine, fan, fresh air and heater apparatus are installed.

First floor. On one side of the corridor a carpenter shop is provided and on the opposite side a demonstrating room, with a lumber room, behind which derives most of its light secondarily through a glass partition, but partly through a small light shaft at the interior angle of the L. Behind the lumber room is a paint room, opening into a small yard. This floor is provided with a small toilet room and a cloakroom.

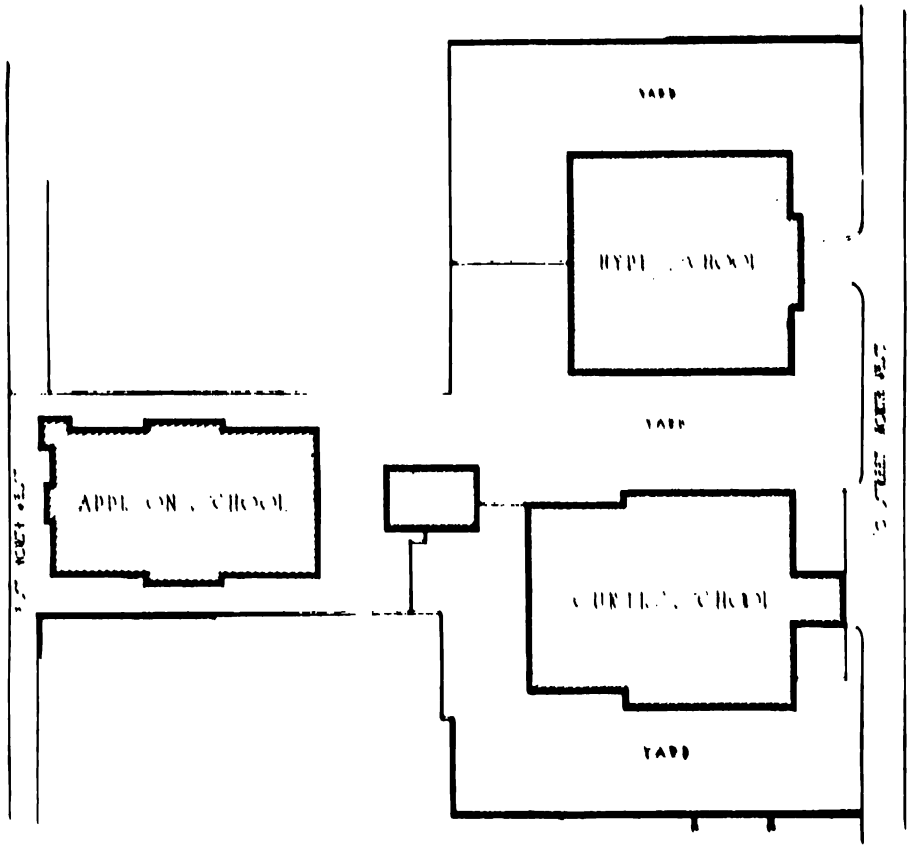
Second floor. This floor is given up to domestic science and has 2 large rooms, the corner room being devoted to instruction in sewing, and is provided with a separate cloakroom. On the opposite side of the corridor is a long cooking room, lighted from both ends, and also from the middle of one side through a small light shaft. This room has its separate cloakroom. One toilet room is provided between the 2 rooms. This building was comparatively inexpensive, the total cost being about $19,000 at the rate of 15.4 cents per cubic foot, the first floor being fireproof.

BLOW AND CARDOZA SCHOOLS.

Plans are shown of the H. T. Blow School and the F. L. Cardoza School, each of which shows what is known as the 8-room cartwheel plan. In the basement are provided boys' toilet and play room, girls' toilet and play room, with all of the necessary heating and ventilating apparatus and storage for wood and fuel. On the first and second floor each in both schools are 4 class rooms, each with bilateral light, and each with a cloakroom opening into the class room, and also into the corridor, the rooms being symmetrically arranged about the center in such a way that the cloakroom of one class room is always under the view of the teacher at her desk in the opposite class room. On the first floor a space opposite the entrance is utilized to provide an office for the principal, and on the second floor this same space is utilized to provide a teachers' room, and the space over the entrance to provide a small library room, the 2 similar spaces at the sides of the buildings being given up to stairs. This cartwheel type is believed to

H. D. FRENCH MANUAL TRAINING SCHOOL WASHINGTON, D. C. A. ANDERSEN, ARCHITECT

JOHNSON SCHOOL ANNEX, WASHINGTON, D. C.



GROUP PLAN, ADDISON, CURTIS, AND HYDE SCHOOLS, GEORGETOWN, D. C.

PORTABLE SCHOOL HOUSE, BALTIMORE, MD.

the use of the schoolhouses must be foreseen by the authorities for at least twenty-four months. The Commission recommends an authorization of at least a dozen such buildings, the number to be increased and be kept up by about 12 in each succeeding year, for two or three years.

FIREPROOFING.

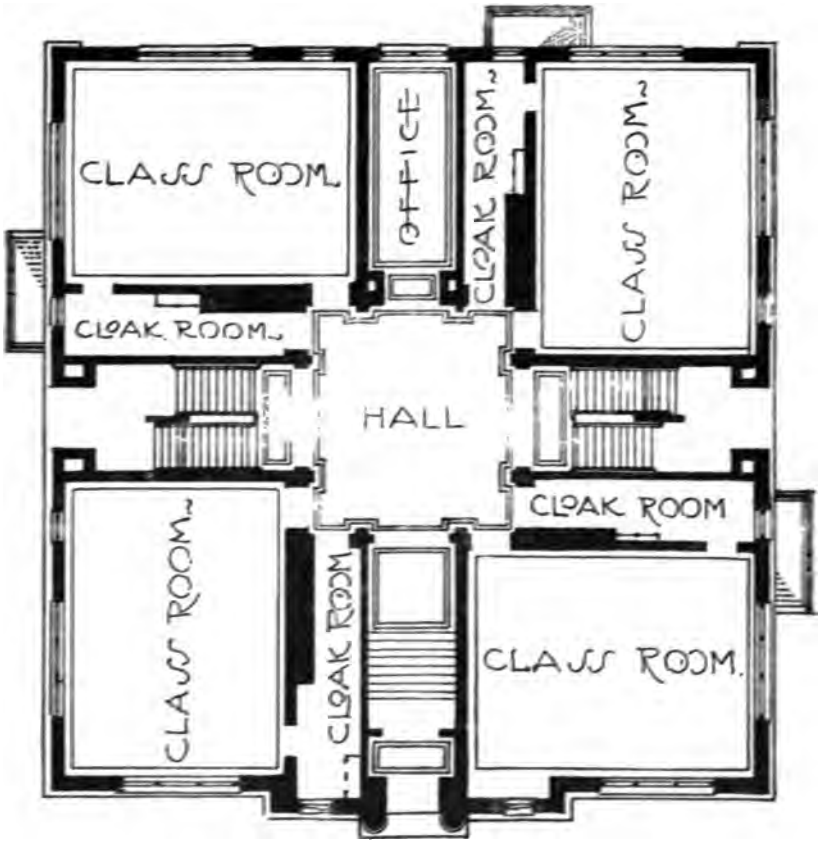
The fireproofing of school buildings is not believed to be so necessary in Washington as in other cities, as the fire risk is not here so great. If the building has, however, more than 2 floors the risk of fire should not be taken, but the building should be fireproof. In a 2-story building panic from fire is more to be feared than the actual fire risk, and it is believed that the proper arrangement of stairways will eliminate this risk. There are, however, other advantages in the fireproof construction which would recommend it in all cases. While more expensive at first cost, the expense of upkeep is greatly reduced. The new buildings in St. Louis are exceptionally fine in this respect, and it has been the experience there that not only is the cost of maintenance from ordinary wear and tear less, but the air of permanence, through the pride of the children in the handsome building, causes much less of the malicious defacement than is the case in the cheaper style of construction. This municipality, therefore, goes to the extreme of fireproofing up to the level of the eaves, even for the 2-story building, and, as the illustrations produced elsewhere in this report will show, has achieved notable results.

ESTIMATES.

The Commission submits the following rough estimate of the cost of the constructions recommended in its report:

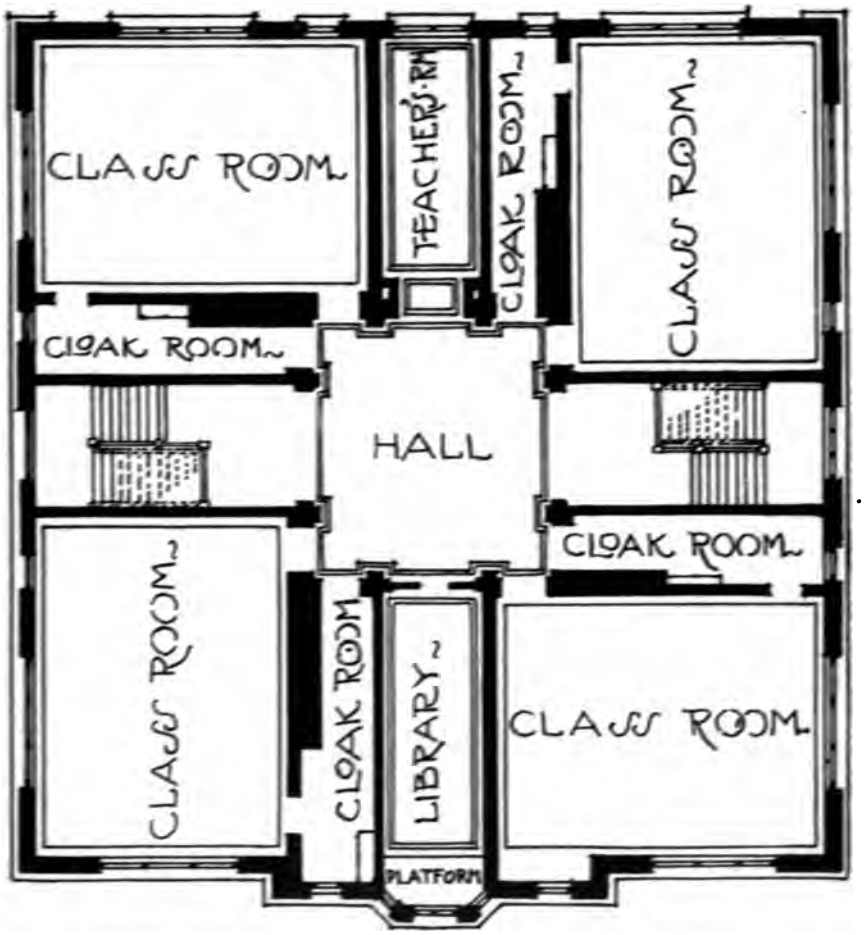
For site, and erection of a 24-room high school	$525,000
For site, and erection of a new Eastern High School, 40 rooms	350,000
For addition to the Western High School	150,000
For white normal school	250,000
For site, and construction of colored normal school	240,000
For new school buildings—sites and erection	800,000
For 12 manual training centers, purchase of sites for such as can not be accommodated on old sites	45,000
Erection of 12 manual training centers	480,000
For addition to Business High School	80,000
For addition to McKinley High School	100,000
For purchase of additional land at various places, of which $200,000 should be appropriated annually for three years	200,000
For 36 portable school houses at $1,800 each	65,000
Total	3,285,000

It is not contemplated that all of this work should be done at once, but, as stated previously, it should all be done within not more than five years.



H. T. BLOW SCHOOL WASHINGTON, D. C. S. ASHFORD, ARCHITECT.

(First floor plan.)



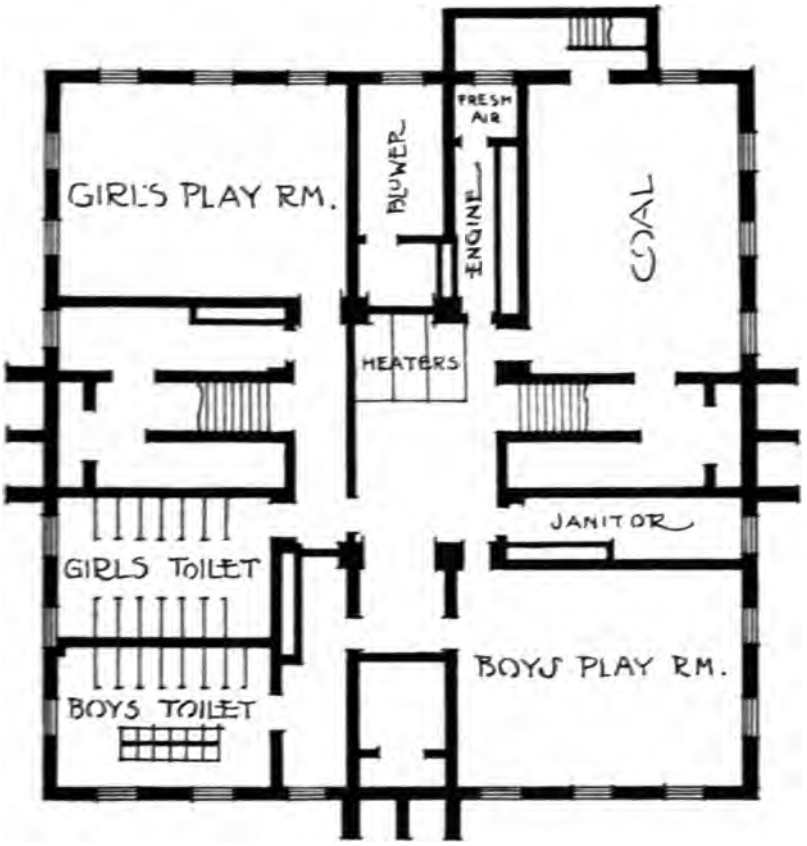
H. T. BLOW SCHOOL WASHINGTON, D. C. S. ASHFORD, ARCHITECT

Second floor plan.

P. B. CARDOZA SCHOOL WASHINGTON, D. C. MARSH & PETER, ARCHITECTS.

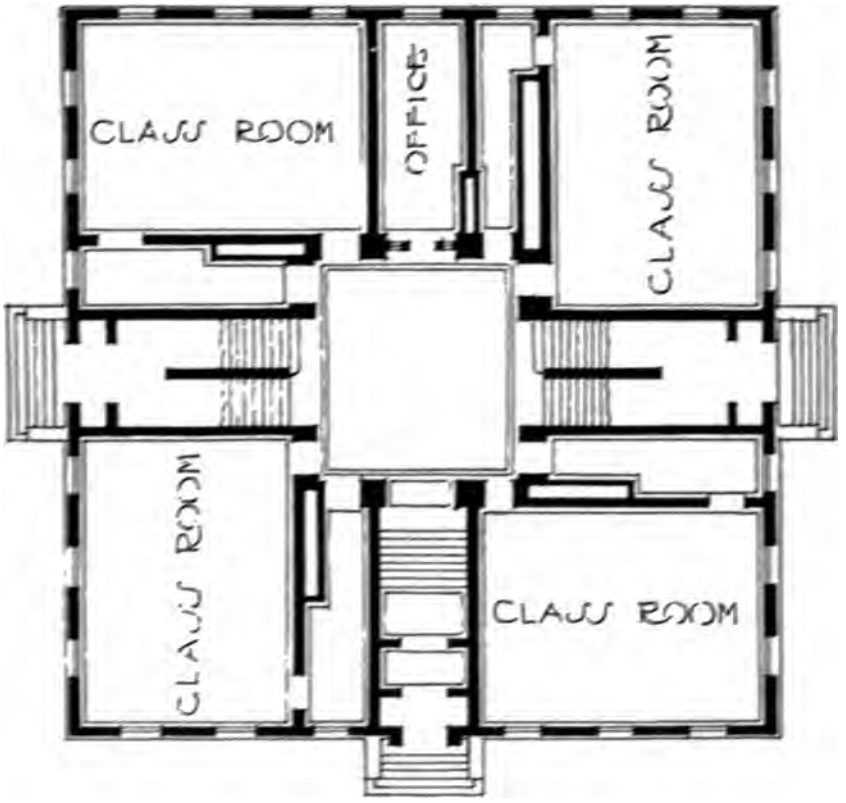
F. L. CARDOZA SCHOOL WASHINGTON, D. C. MARSH & PETER, ARCHITECTS.

Basement plan.



F. L. CARDOZA SCHOOL WASHINGTON, D. C. MARSH & PETER, ARCHITECTS.

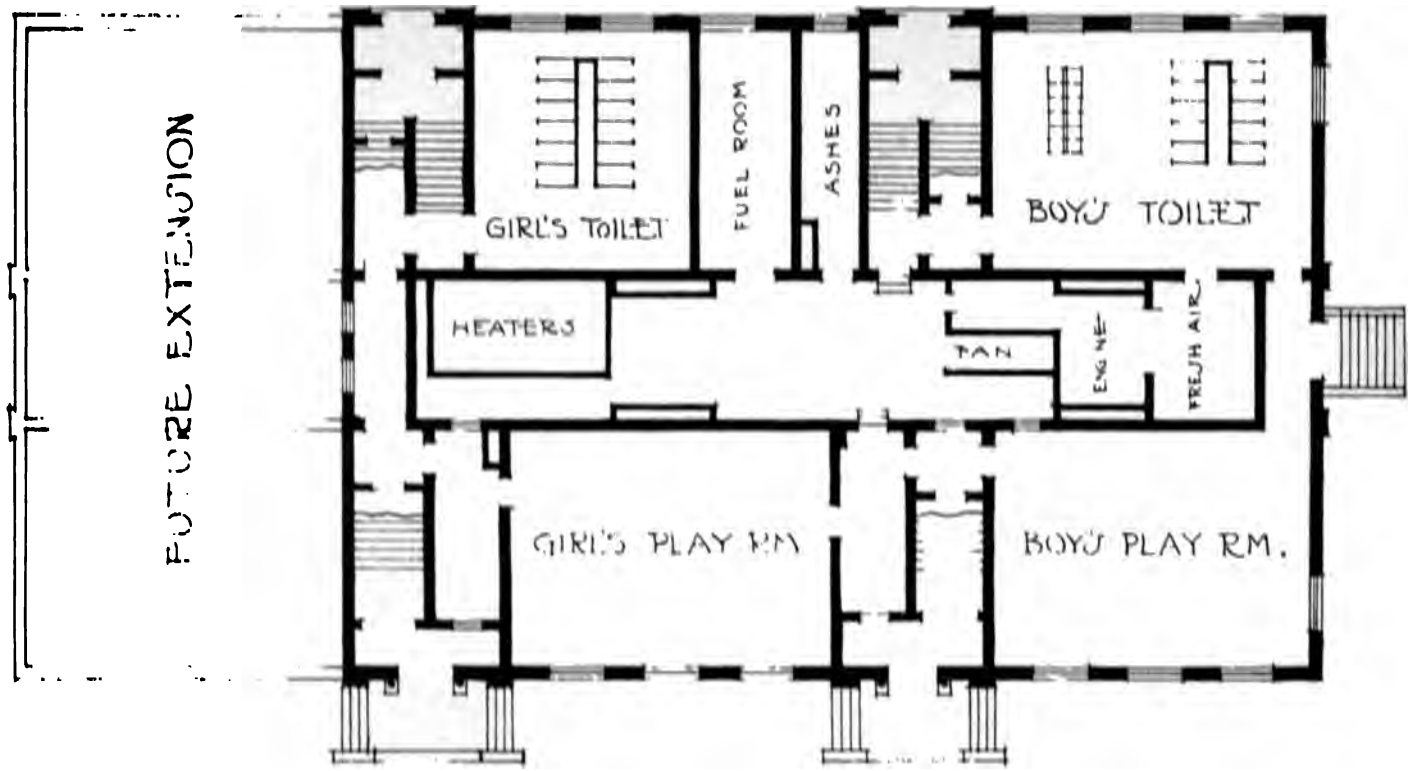
Basement plan.



F. _ [illegible] WASHINGTON, D. C. MAHON & PETER, ARCHITECTS

First floor plan. [illegible]

LANGSTON SCHOOL. WASHINGTON, D. C. A. P. CLARK, Jr., ARCHITECT.

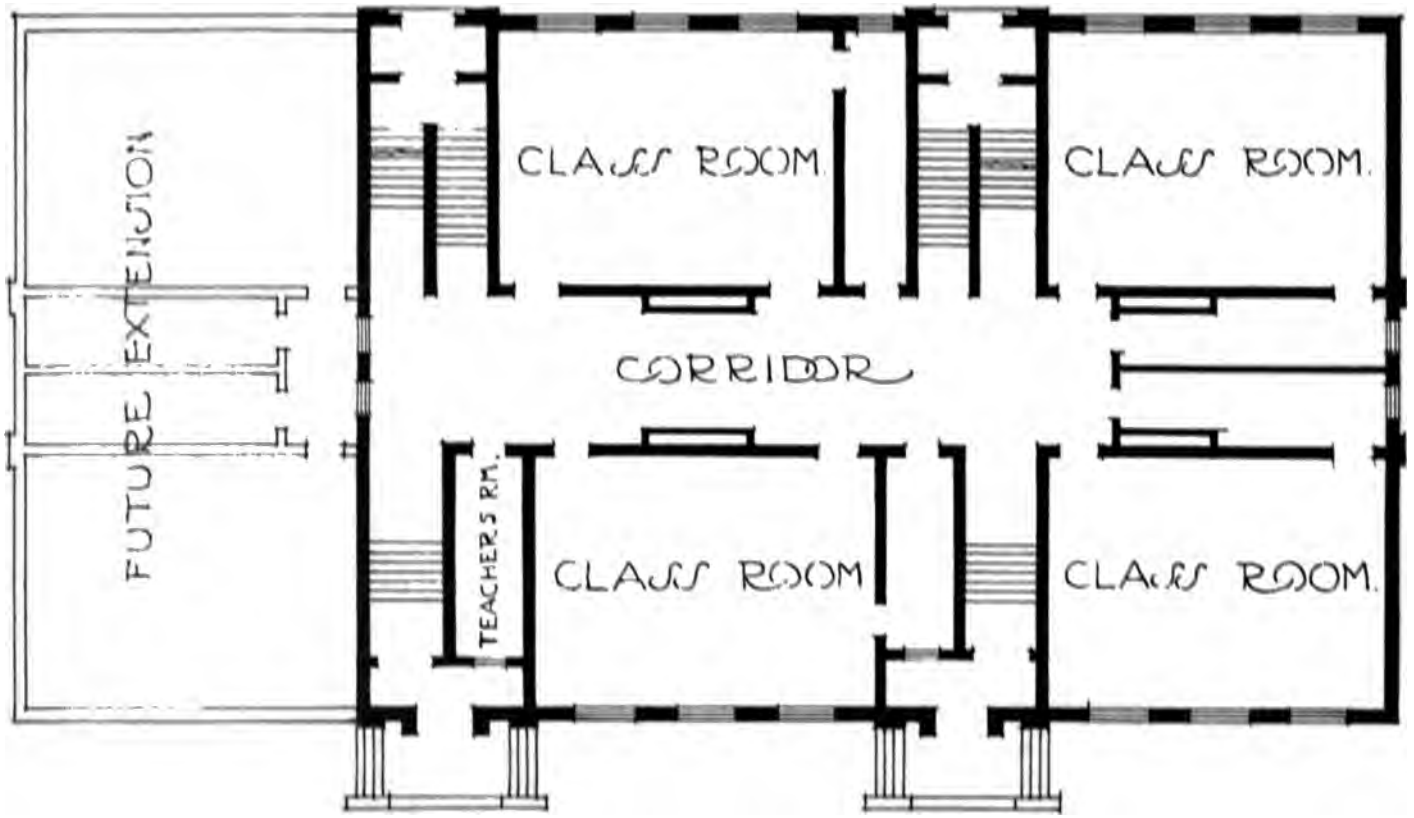


LANGSTON SCHOOL.

WASHINGTON, D. C.

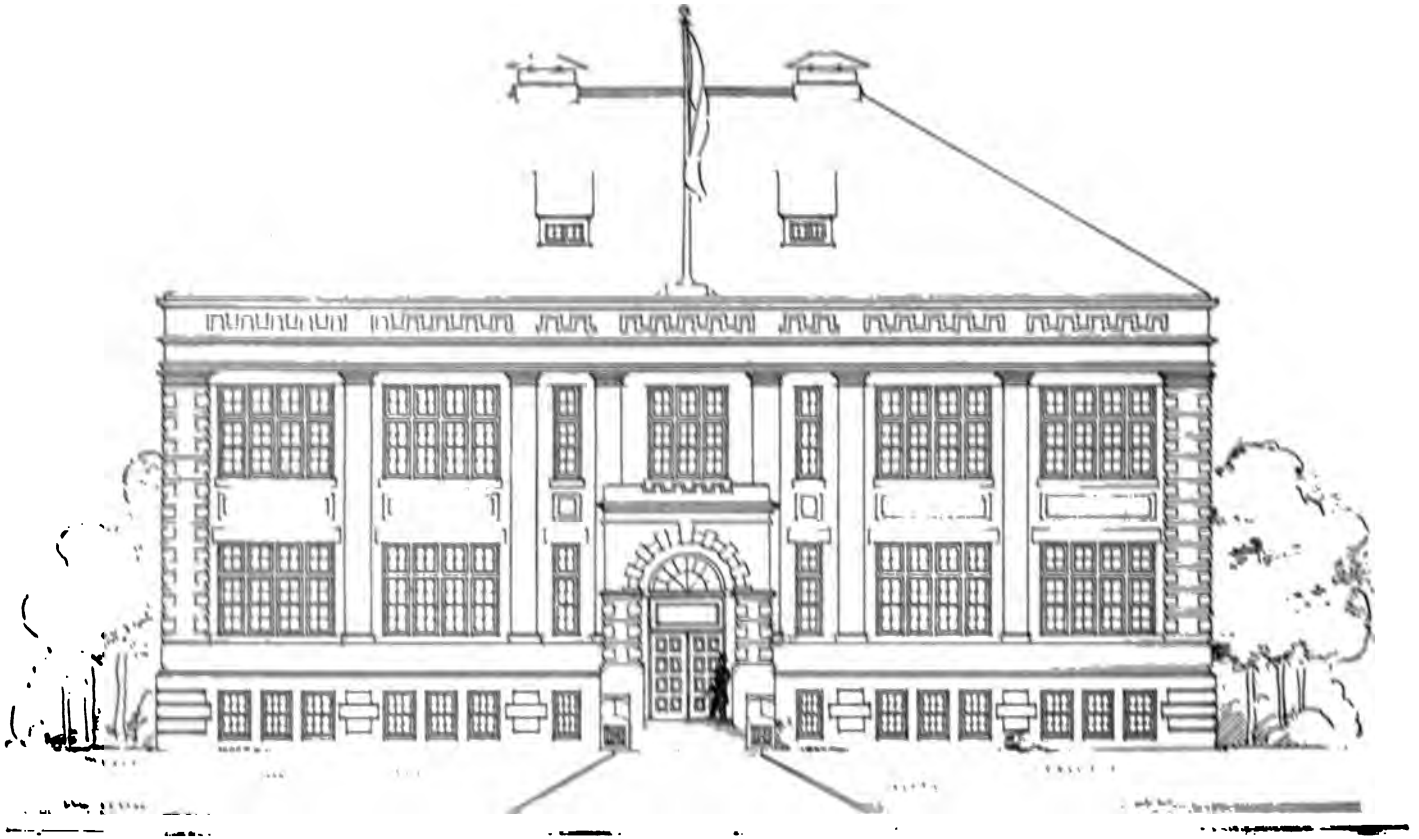
(Basement plan.)

A. P. CLARK, Jr., ARCHITECT.



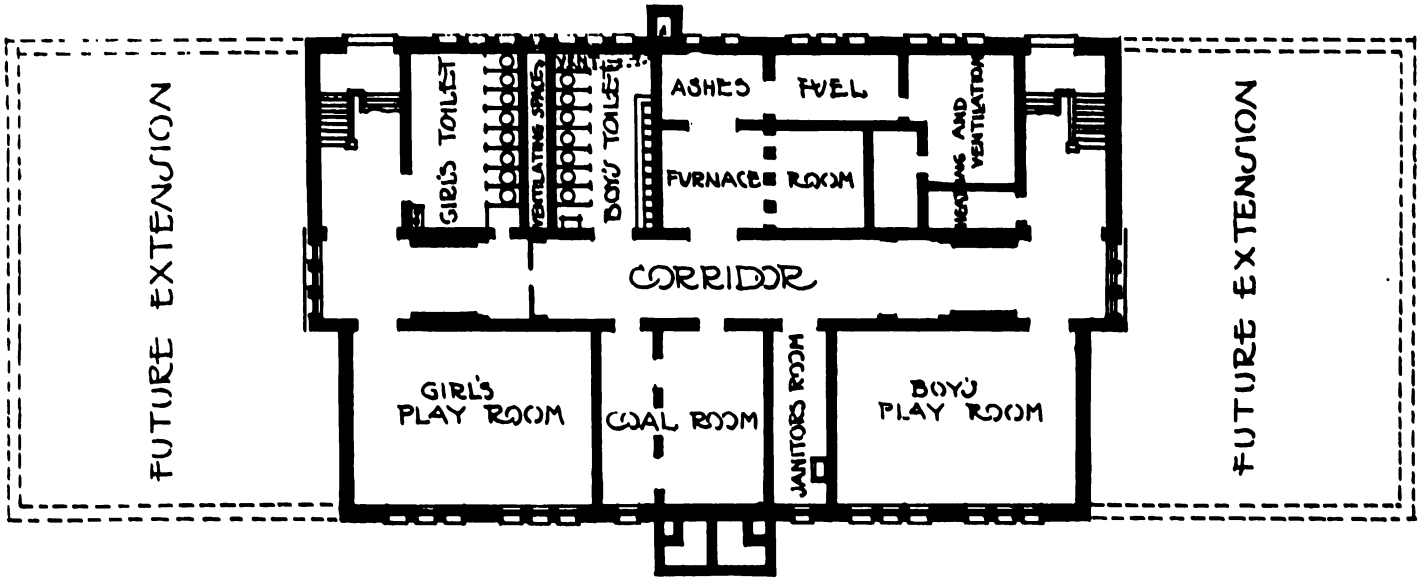
LANGSTON SCHOOL. WASHINGTON, D. C. A. P. CLARK, Jr., ARCHITECT.

(First floor plan; second floor similar.)



KETCHAM SCHOOL. WASHINGTON, D. C. A. ASHFORD, ARCHITECT.

(Elevation.)

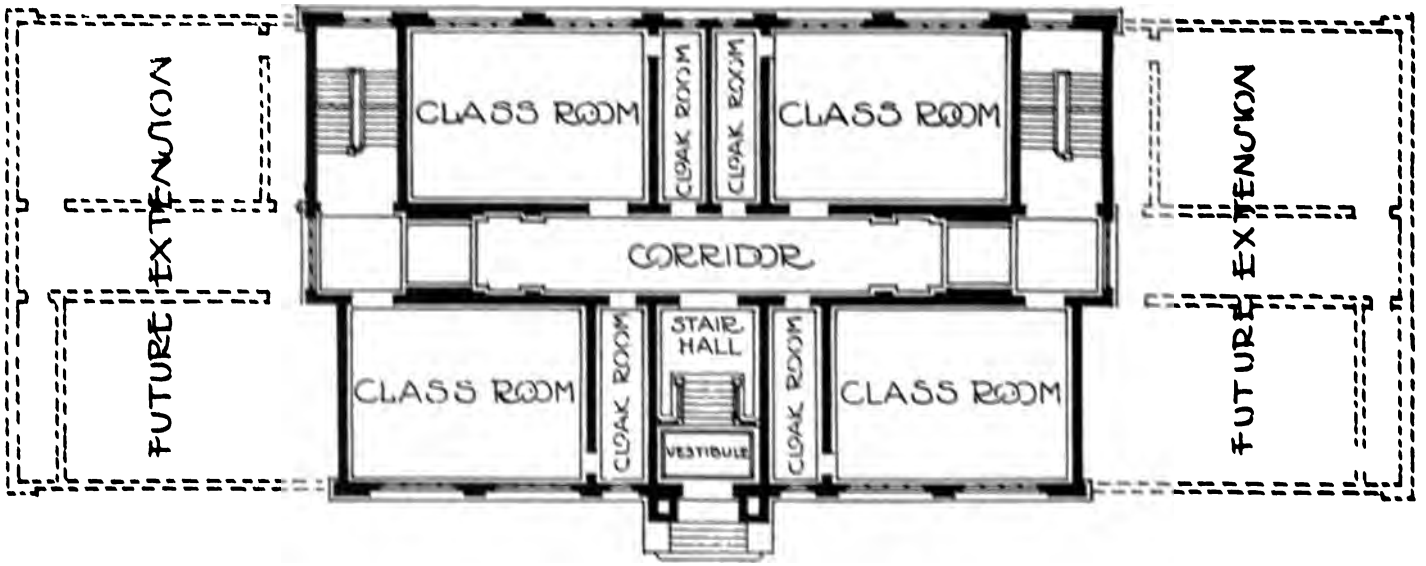


KETCHAM SCHOOL.

WASHINGTON, D. C.

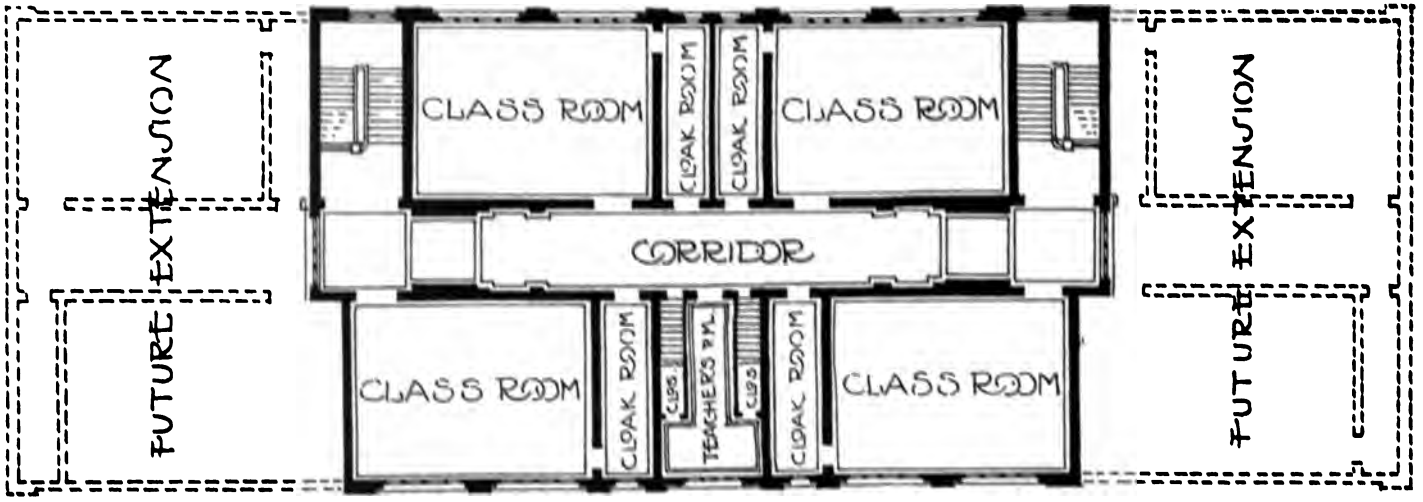
(Basement plan.)

S. ASHFORD, ARCHITECT.



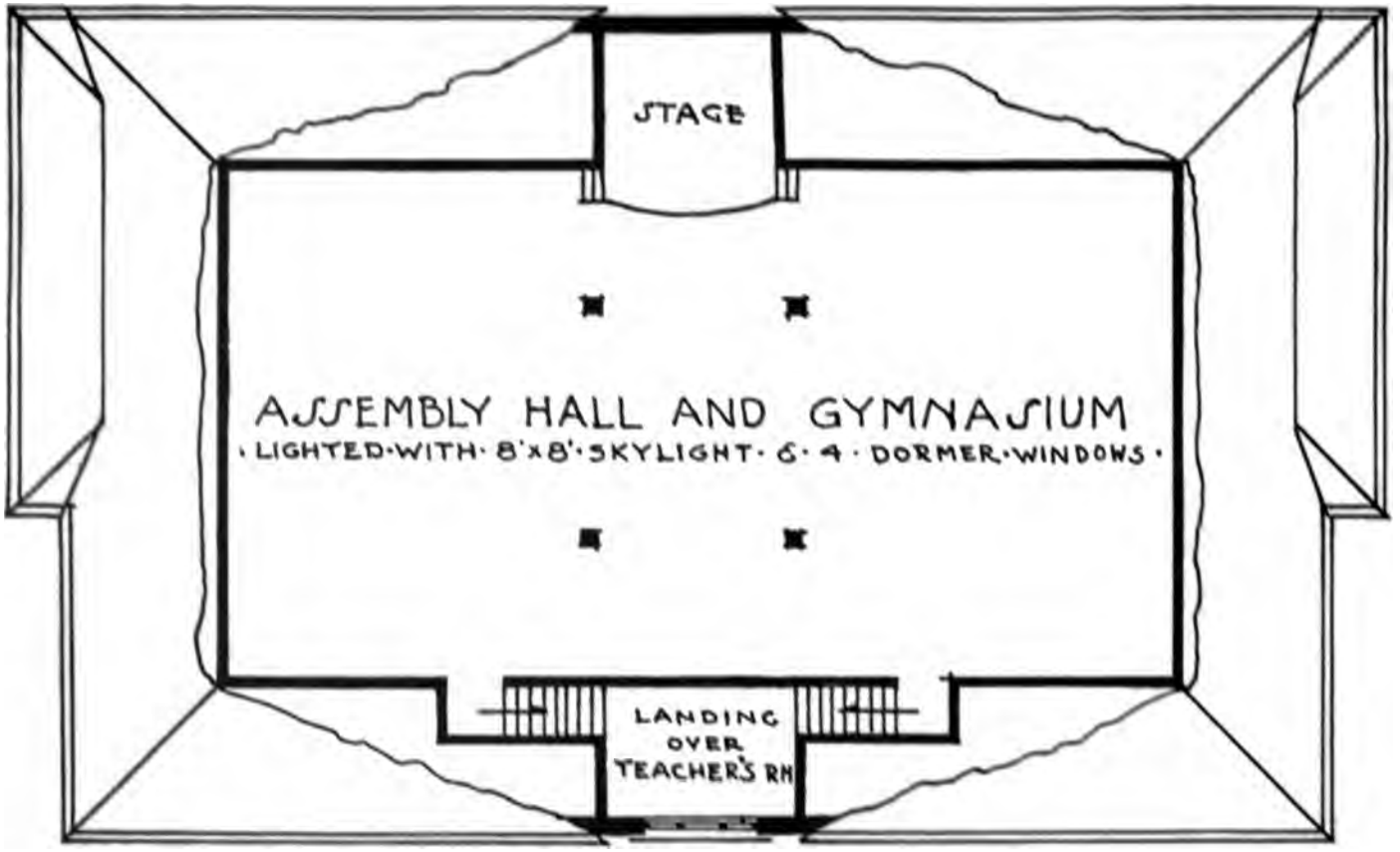
KETCHAM SCHOOL, WASHINGTON, D. C. S. ASHFORD, ARCHITECT.

(First floor plan.)



KETCHAM SCHOOL. WASHINGTON, D. C. S. ASHFORD, ARCHITECT.

(Second floor plan)



KETCHAM SCHOOL. WASHINGTON, D. C. S. ASHFORD, ARCHITECT.

(Attic plan.)

give a maximum of economy for an 8-room school building where there is no intention to enlarge the installation, except at some future day by the possible erection of a second 8-room building on the same site. It does not, however, lend itself to extension in any other way. These 2 schools cost, respectively, $42,600 for the Cardoza, or at the rate of 11.9 cents per cubic foot, and $42,700 for the H. T. Blow, or at the rate of 12.2 cents per cubic foot. They are, however, of nonfireproof construction.

Two schools of the 8-room extensible type are illustrated.

LANGSTON SCHOOL.

This is an 8-room building, provision being made for future extension to a 12-room building of the corridor type, with the 2 end rooms and the 2 interior rooms at present built. The space at the ends of the corridors will ultimately be given up to cloakrooms for the 2 end rooms. The corridor will then be lighted through these cloakrooms and through the side lights at the stairways at its ends. The building has two entrances, the front of which, while at present giving the building a lopsided appearance, will ultimately be symmetrically disposed. Small rooms are provided in the portion of the space at each entrance suitable for teachers' and principal's rooms. Class rooms are all provided with unilateral light. In the basement a play room and toilet room for each sex is provided, in addition to the mechanical installation. The future extension will provide for 2 large rooms suitable for manual training purposes. This building is nonfireproof and cost less than $37,000 for the 8 rooms, or about 9.6 cents per cubic foot.

KETCHAM SCHOOL.

This school is also of the corridor type and is an 8-room building with provision made for future extension, first to 12 and ultimately to 16 rooms. In the basement provision is made for a play room for each sex and toilet room for each sex, the boys' toilet room being thrown some little distance from the play room, but a wire screen being provided in the corridor to prevent access between the 2 wings. A noticeable feature of this toilet installation is a ventilating space provided between the closet fixtures, in which space, through a solid brick partition, all the flushing tanks and pipes are exposed, thus providing for accessibility for repairing while the toilet rooms are in use. Each floor has 4 class rooms provided with unilateral light and each with a cloakroom with separate entrances for class room and corridor. The stairs are at the back of the building and at the present ends. Between the 2 front class rooms on the second floor are provided stairways to a third-floor large dormer room, which has been fitted up for an assembly hall and gymnasium, more suitable for the latter than the former by reason of its shape and its position

on the top floor of the building. This school is provided with an ample site for its future extension and large playground space in the rear. Its total cost was $47,702 or about 12.6 cents per cubic foot including gymnasium or assembly hall.

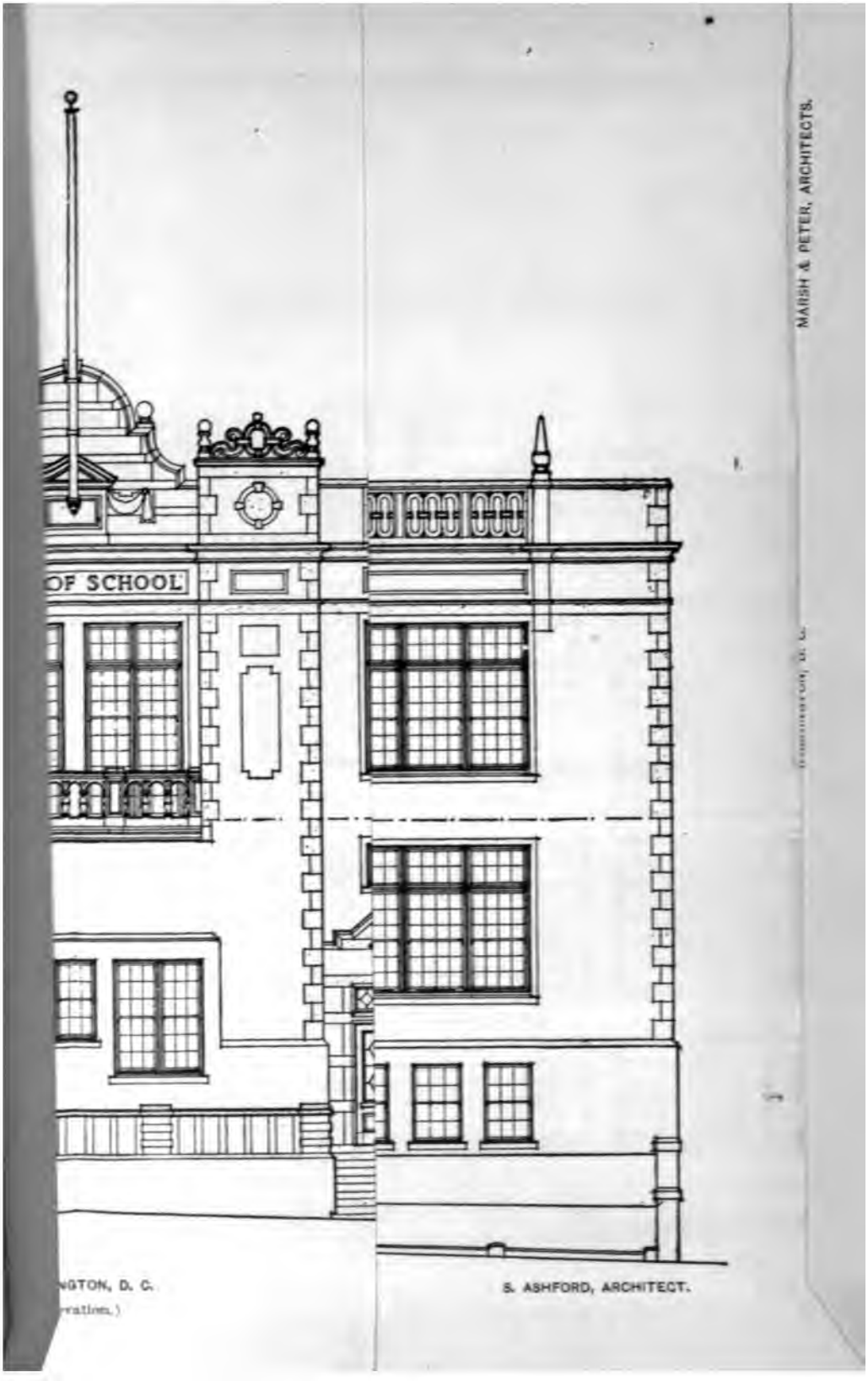
NEW SCHOOL NO. 153.

Plans are also shown of the new school No. 153 under construction to relieve the Mott School. This is a 16-room building and shows skillful adaptation of the 8-room cart-wheel type to a 16-room building, with the space between the 2 separate buildings given up to the entrance on the front and a large assembly hall in the rear, the assembly hall corridor and entrance being held at a level lower than the class room floors in order to provide for lighting the rear interior class rooms over the roof of the assembly hall. Stairs are at the extreme ends of the corridors. Class rooms are bilaterally lighted. The assembly hall provides seats for 650 pupils. In the basement are separate wings, 1 for each sex. Toilet room is provided, with 3 large rooms in addition suitable for manual training, play rooms or similar purposes. Space between the 2 wings is utilized for mechanical installation, space under the assembly hall being unexcavated. This building will cost about $95,000 or about 13.4 cents per cubic foot.

Playground space affords 38½ square feet for each pupil and a large public park exists immediately across the street in front of the building.

NEW SCHOOL NO. 154.

View and plans are also shown of public school No. 154, a new 16-room building about to be constructed on Seventeenth street in Mount Pleasant, which combines many of the ideas embodied by the Commission in this report. The building has a large assembly room on the basement floor, which has been ingeniously designed to extend through the first floor, so that the entire corridor space required in the first floor can be turned into the assembly room as a balcony, and this space in the basement floor is utilized as a portion of the main floor of the assembly room, without other obstruction than 4 octagonal columns. The basement contains, besides this assembly hall, the necessary space for the mechanical installation, 2 play rooms and a large toilet room for each sex in opposite wings of the building, and teachers' and kindergarten toilets on each floor above. The first floor has 4 class rooms upon the face, each provided with a cloakroom and with ample unilateral light, and contains 2 class rooms on each flank in the rear, each similarly provided with a cloakroom and ample unilateral light, opening into the corridor previously referred to as a gallery of the assembly hall. This corridor can be cut off from the assembly hall by a translucent partition, so that the corridor will then obtain secondary light from the skylight ceiling of the assembly hall.



MARSH & PETER, ARCHITECTS.

NGTON, D. C.
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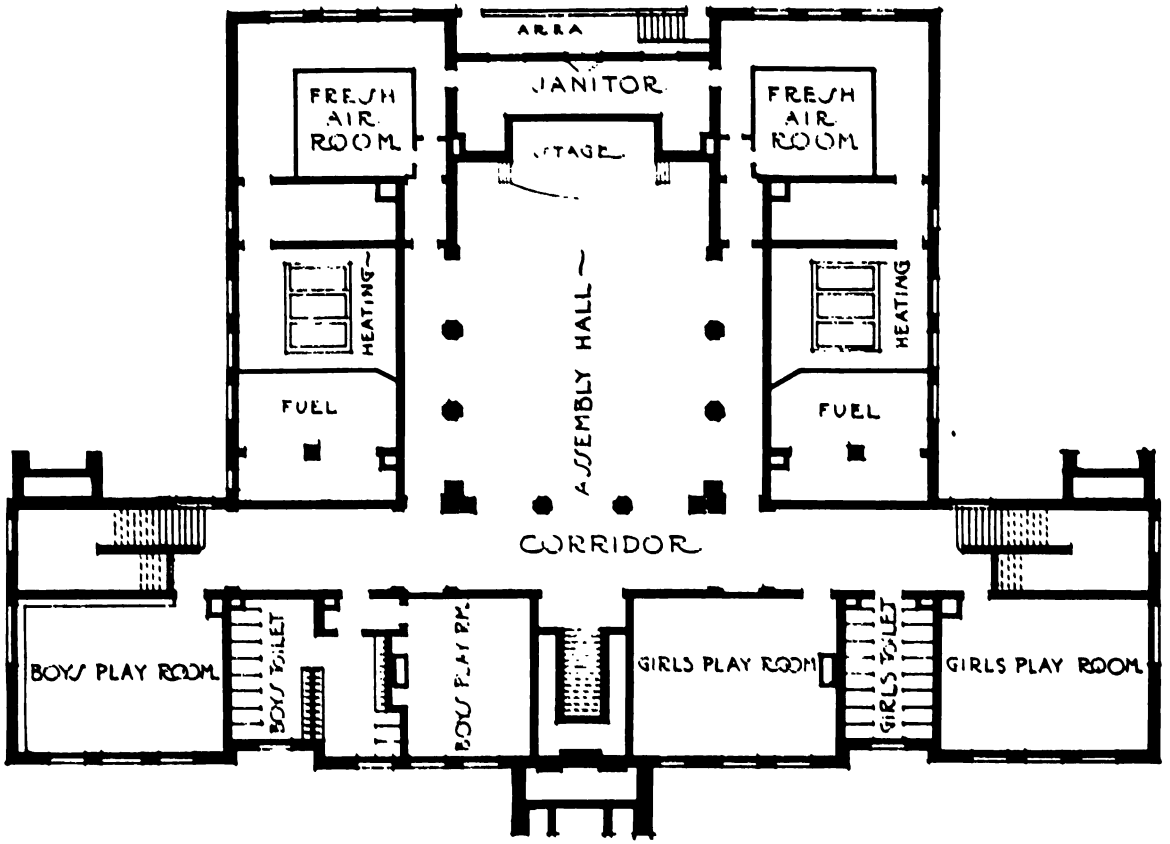
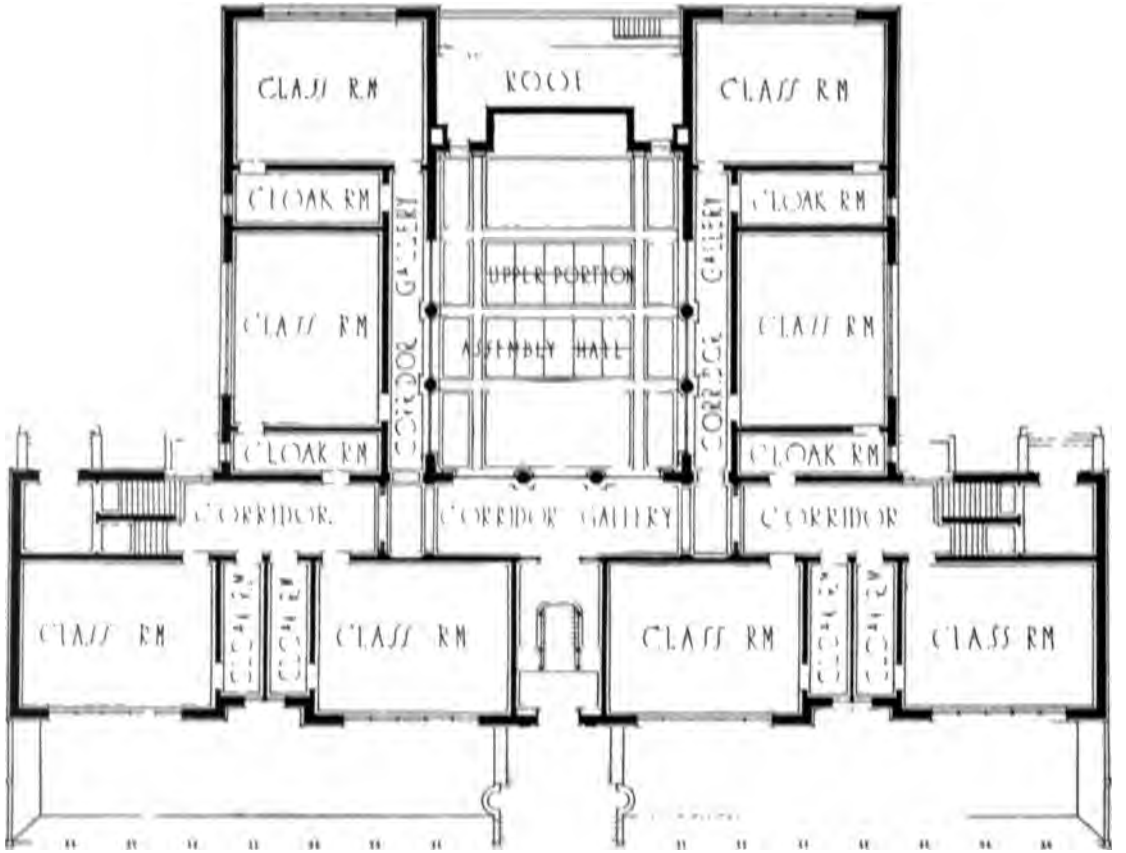
S. ASHFORD, ARCHITECT.

NEW SCHOOL NO. 154. WASHINGTON, D. C. MARSH & PETER, ARCHITECTS.



NEW SCHOOL NO. 184. WASHINGTON, D. C. MARSH & PETER, ARCHITECTS.

(Basement plan.)



NEW SCHOOL NO. 154.

WASHINGTON, D. C.

(First floor plan.)

MARSH & PETER, ARCHITECTS.

The second floor has entirely a similar arrangement of class rooms, the corridor for the flanking rooms in this case being directly lighted from the interior space over the roof of the assembly hall. This floor also contains the principal's room in the space over the entrance hall and vestibule of the floor below.

The building is provided with playground space of about 34,500 square feet, in addition to the area occupied by the building, and is estimated to cost, exclusive of site, $103,000.

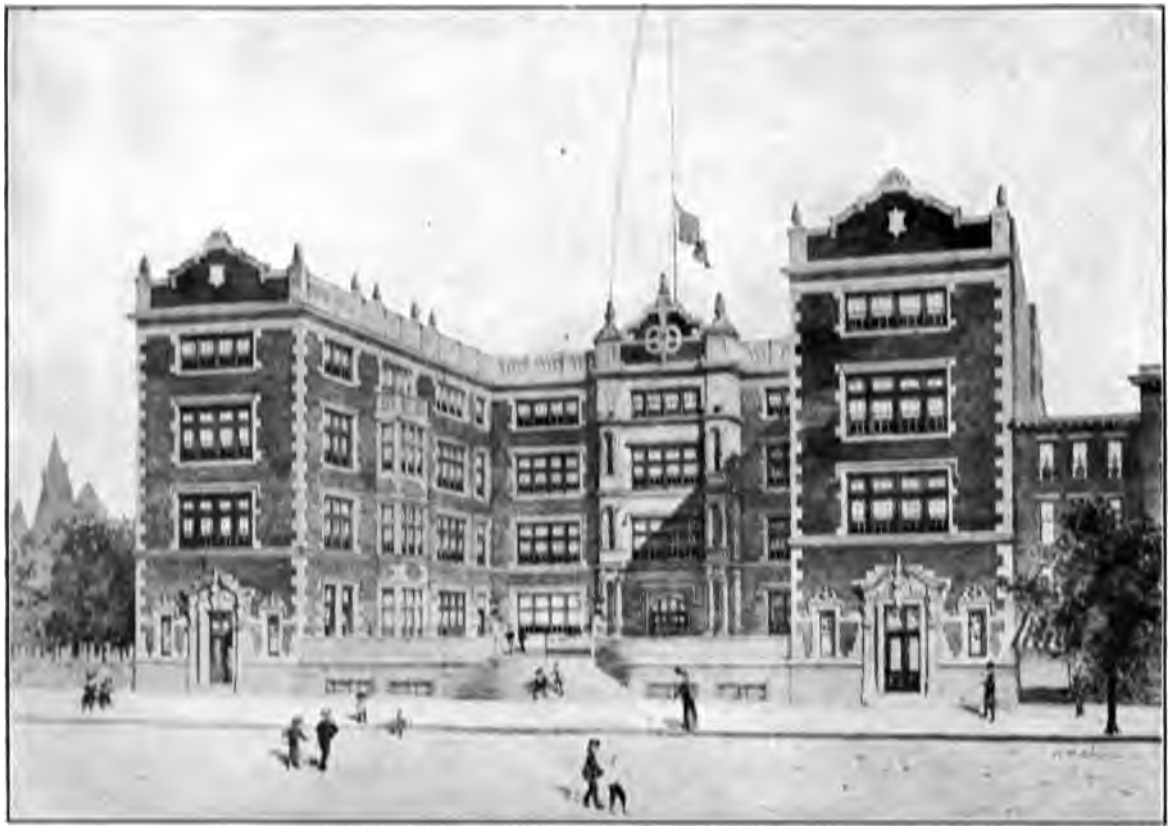
A short table is hereto appended, giving the description and cost of some of the recently constructed school buildings in Washington. Attention is invited to the low cost per cubic foot, which, of course, has been limited by the appropriations available. The buildings are nonfireproof, as a rule, and for that reason not nearly so good as the St. Louis buildings, for instance, which are fireproof to the level of the second-floor ceiling, or the Boston schools, entirely fireproof. The Commission desires to register itself as of the opinion that the extra expenditure required for the fireproofing, as at St. Louis, of the building up to the roof, is an economical measure worthy of adoption in Washington schools.

Descriptions and cost of school buildings.

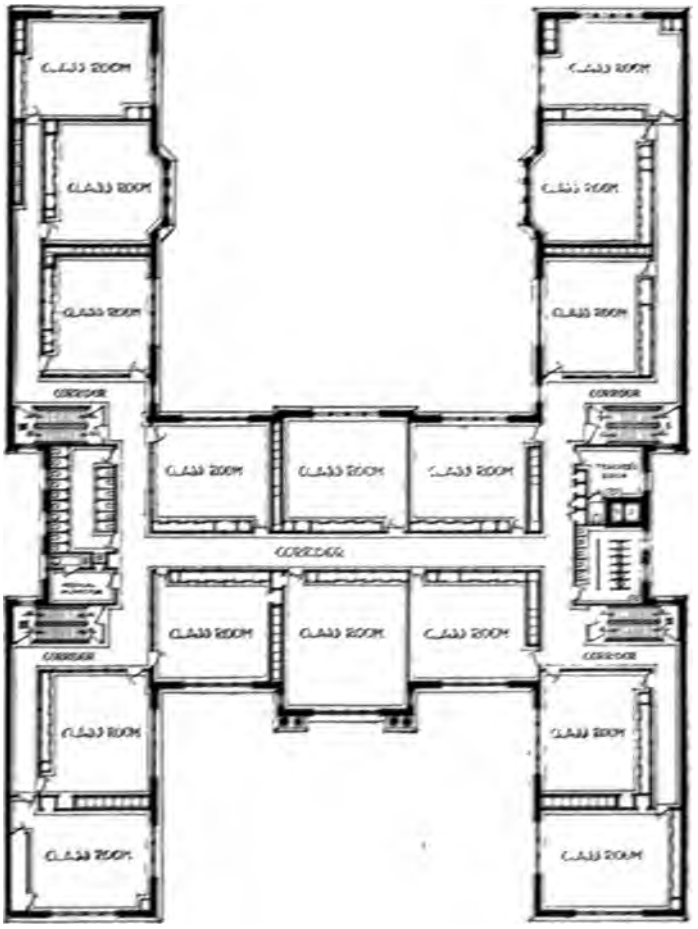
Name.	Cost.	Cubic contents.	Cost per cubic foot.	Description.	Architect.
			Cents.		
Armstrong Manual Training	$[illegible]	500,000	20.7	[illegible]-room, [illegible] mottled brick, fireproof.	W. B. Wood.
McKinley Manual Training	130,000	700,000	18.6	[illegible]-room, [illegible] tled brick, fireproof.	H. D. Cobb.
Petworth	9,150	80,000	11.4	4-room, red brick	A. P. Clark, jr.
Langston	30,500	285,000	10.7	8-room, red brick	Do.
Matthew G. Emery	44,000	421,000	12.0	12-room, white mottled brick	Inspector of buildings.
Addition to Girls' Cottage, Industrial Home School	4,700	41,000	11.7	1-room, red brick	Do.
Addition to Brookland, No. 16.	20,700	175,000	11.7	4-room, red brick	W. S. Simmons.
Addition to Takoma, No. 11.	20,000	180,000	11.1	4-room, frame, jobbie dash.	W. J. Palmer.
Abby S. Simmons, No. 134	36,000	330,000	11.4	8-room, red brick	A. B. Millett & Co.
James B. Edmonds, No. 135	20,000	200,000	10.0	do	Marsh & Peter.
Samuel E. Wheatley, No. 19	34,000	340,000	10.0	do	A. P. Clark, jr.
Addition to Crutch, No. 10	20,000	170,000	11.7	4-room, red brick	Inspector of buildings.
Edward M. Stanton, No. 138	20,000	200,000	10.0	4-room, rough brick, pebble dash.	Do.
Bryan, No. 139	17,000	224,000	8.0	4-room, frame, jobbie dash.	Do.
Henry P. Montgomery, No. 140	30,000	270,000	11.1	8-room, red brick	Wood & Deming.
B. B. French Manual Training, No. 141.	16,000	122,000	13.1	6-room, first floor fireproof, rest brick.	Inspector of buildings.
William Lodlow, No. 142	41,000	366,000	11.1	8-room, red brick	John L. Smithmeyer.
N. P. Gage, No. 143	44,000	364,000	12.3	do	L. Norris.
Business High	150,000	1,000,000	15.0	20-room, red brick	B. S. Simmons.
John W. Ross	41,000	366,000	11.4	8-room, red brick	C. A. Dobbel.
Henry T. Blow	42,000	340,000	12.2	do	Inspector of buildings and G. O. Totten.
Anthony Hyde	46,000	347,000	12.5	do	A. B. Heaton.
F. L. Cardoza	42,000	357,000	11.9	do	Marsh & Peter.
Industrial Home School, Blue Plains.	70,000	410,000	17.1	Brick	J. L. Smithmeyer.

SCHOOL BUILDINGS OF NEW YORK.

The development of the modern school building in New York City and boroughs is largely traceable to the exceptional work of Mr. C. B. J. Snyder, the superintendent of school buildings of the board of education of that city, and the type used by him is an extremely skillful adaptation of the necessities of a city block to the requirements of a school. The problem that has confronted him has been an ever-changing one. Large sections of the city, apparently entirely built up with 1-family houses, are constantly seized upon by real estate operators and the old houses are rapidly demolished and the erection of apartment houses is begun, after which there seems to be hardly a cessation of work until the whole area has been gone over and the section rapidly rebuilt. It is therefore necessary if schools are to be supplied to meet the requirements that they must be built promptly and of large size, and the work must be started as soon as possible after the commencing of the work of rebuilding the section by real estate operators. This has caused the development of a fireproof building of the H type, sometimes with party walls on both sides of the building, at other times with the building occupying portions of 3 sides of the block. Class rooms get their light from the central area. This light can not be obstructed by other buildings, the distance between the arms of the H, 80 feet or more, insuring illumination. On the lower floors the glass area is larger than on the upper floors and in internal corner rooms prism glass is used to increase the light. Play rooms and gymnasiums occupy the basement floor, or the street floor, or both, if there are 2 basement floors, and are planned to have good light. Assembly halls generally have the gallery on the first floor level, and the main floor a short flight of steps below the sidewalk, and are within the arms of the H. In some buildings from 2 or 3 to 6 of the class rooms on the top floor are thrown into an assembly room. The corridors occupy the space against the party wall, where the building is bounded by party walls, and depend for light on secondary light through the interior walls of the class room. In some cases they are carried through to the front or rear and are well lighted. The stairs are well located and of the double inclosed type, thus necessitating at least 14 foot height of stories. Most of the buildings have single tiers of rooms in the arms of the H, although some of the larger have double tiers, with an interior corridor. The crossbar of the H is generally nearer one street than the other, leaving open areas of unequal size, the larger of which, in the basement and first floor, is used to form an assembly hall, and the smaller, in the basement and first floor, to form the gymnasium. In some cases, as in the De Witt Clinton High School, class rooms in the first floor are thrown into



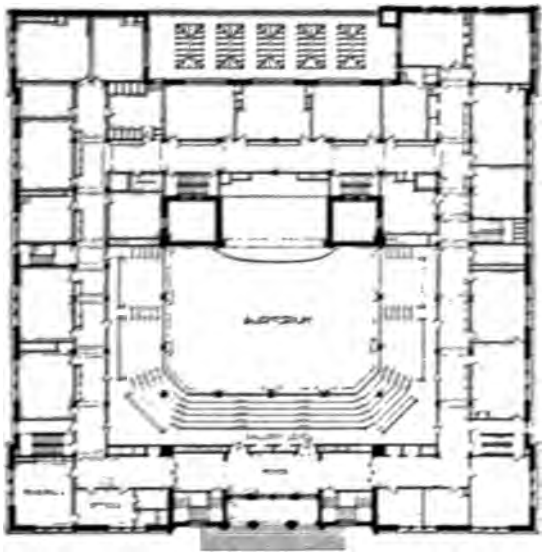
PUBLIC SCHOOL NO. 146, BROOKLYN. C. B. J. SNYDER, ARCHITECT.



PUBLIC SCHOOL NO. 146. BROOKLYN. C. B. J. SNYDER, ARCHITECT.

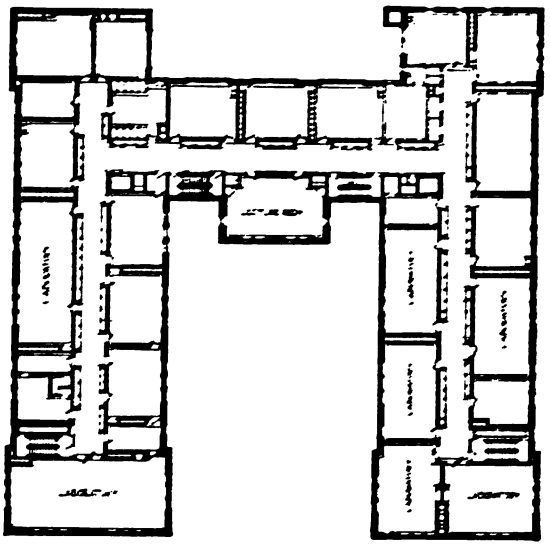
Second, or typical, floor plan.

DE WITT CLINTON HIGH SCHOOL, NEW YORK. C. B. J. SNYDER, ARCHITECT.



DE WITT CLINTON HIGH SCHOOL. NEW YORK. C. B. J. SNYDER, ARCHITECT.

Second floor plan.



DE WITT CLINTON HIGH SCHOOL. NEW YORK. C. B. J. SNYDER, ARCHITECT.

(Third floor plan.)

the assembly hall. In some buildings playground space is provided by fitting up the roof for this purpose, as well as play rooms on the ground floor.

PUBLIC SCHOOL NO. 146, BROOKLYN.

Plans are reproduced of public school No. 146, Brooklyn, the typical H-shape form, with a single tier of class rooms in the arms of the H, with assembly room beneath the open-air playground in the larger court extending under one of the wings only, the assembly room being 83 by 109 feet. The building is 4 stories in height, with a cellar for the heating and ventilating apparatus and cold storage. The first story contains principal's office, library room, workshop, 2 kindergarten rooms, pupil's toilet and indoor play rooms. The other 3 floors contain 16 class rooms each, a total of 48 rooms, one of which, on the top floor, is used for a cooking room, being 28 feet square. All floors contain necessary toilets, medical inspector's rooms, teachers' retiring rooms, etc. The building has 8 stairways and cost $417,000, exclusive of site.

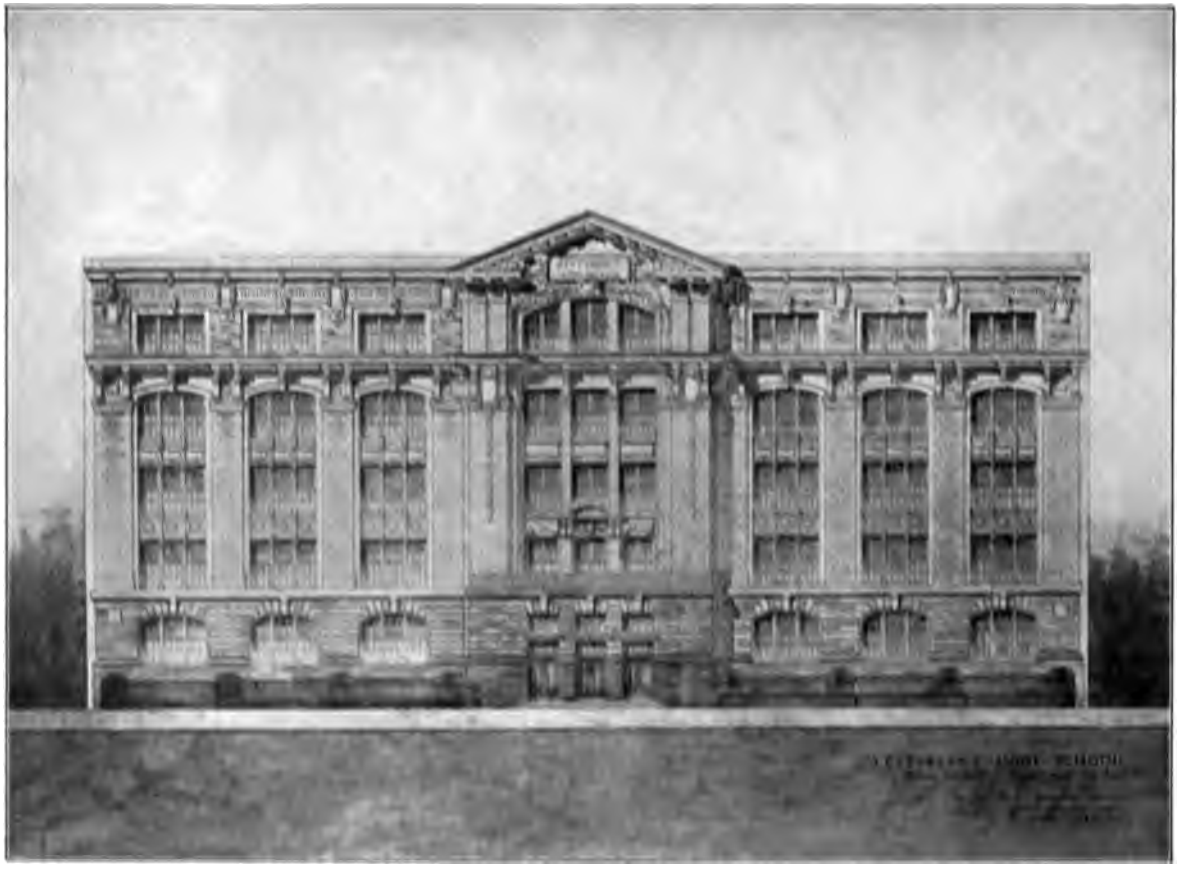
DE WITT CLINTON HIGH SCHOOL.

The plans and view of the De Witt Clinton High School are also published, this being one of the largest schools in the world, accommodating 3,750 students, containing a subbasement, basement, 5 floors, and an attic. In the subbasement heating, ventilating, and coal-storage space is provided, and the greater part of the basement is occupied by gymnasium, shower baths, locker rooms, and the main floor of the auditorium. The first floor contains the gallery and upper part of the auditorium, a number of office rooms, and from the second floor upward the building assumes the H shape, with 2 of the arms elongated; and none of the walls being party walls, 2 tiers of class rooms and laboratories are provided with corridor between. The second floor is given over to biological laboratories, library, drawing and class rooms, and small gymnasium, with a few storerooms and toilet rooms. The third floor is similarly arranged. The fourth floor is given over largely to class rooms, study hall, and library. The fifth floor, laboratories for chemistry, study hall, lecture rooms, and class rooms, and in the attic a large, well arranged lunch room is provided. The building is very handsomely furnished. It is noted that the auditorium possesses a $7,000 pipe organ, and among its decorations are 2 large paintings, with ex-Governor Clinton as the feature. This room has a capacity for about 2,000 pupils, is well arranged, and provides for access from outside without the necessity of passing through any portion of the building. The building cost about $650,000, exclusive of site.

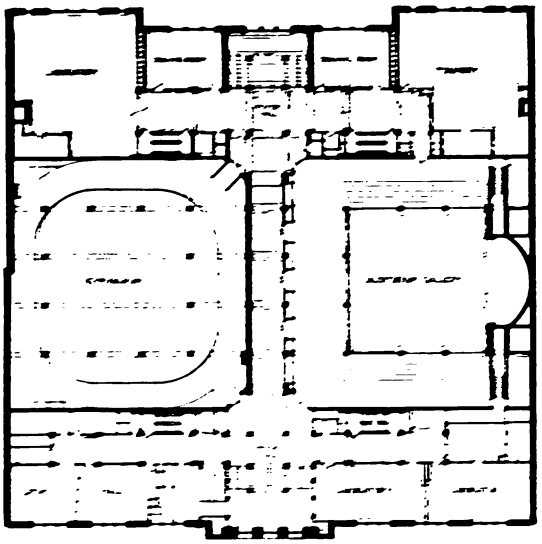
STUYVESANT HIGH SCHOOL.

The Stuyvesant High School, Borough of Manhattan, another magnificent and recent building, intended for high school and manual training purposes, is also of the H type, with party walls, the H, however, being turned the other way from the usual plan—that is, with the crossbar normal to the 2 main fronts—thus giving 2 courts with party walls extending only part way from the face to the back of the building, the 2 courts being equal in size and being occupied in the main and first floors by having the court space occupied on the one side by the assembly room and on the other side by the gymnasium. The auditorium is 100 by 77 feet and the gymnasium 93 by 100 feet, the latter having lockers and bathrooms adjoining. The first floor, in addition to the gallery of the auditorium and gymnasium, contains 2 chemical laboratories, 2 class rooms, 2 drawing rooms, and 2 shops, besides a study hall. The second floor has 8 class rooms, 2 drawing rooms, 4 shops, 2 physical laboratories, and 1 lecture room. The third floor contains 1 chemical laboratory, 8 class rooms, 1 drawing room, 5 shops, 1 physical laboratory, 1 lecture room, and 1 library room. The fourth floor has 15 class rooms, 2 drawing rooms, 4 shops, and 1 lecture room. The fifth floor, 16 class rooms, 2 drawing rooms, and 4 shops. The class rooms are of standard size, while the drawing rooms and shops are each 26 by 50 feet. Many of the rooms occupied as manual training shops overlook the courts above the roofs of the assembly room and gymnasium and have these sides, composed almost entirely of glass, set in iron framework in panels about 2 feet wide, extending from floor to ceiling, and hinged at the top to be swung outward at the bottom.

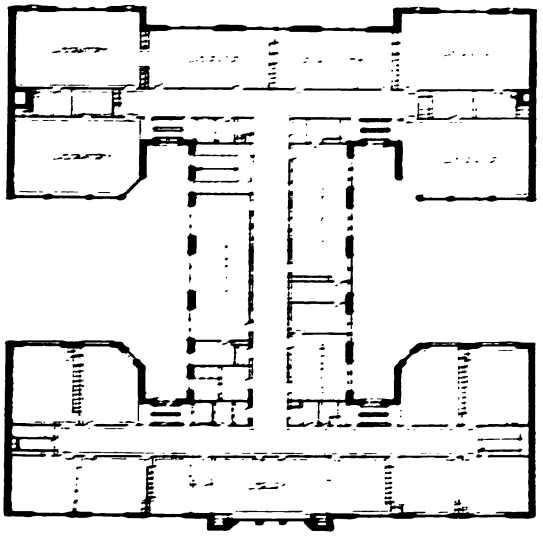
A feature of the gymnasium worthy of note consists in taking advantage of the fact that the running track is on about the same level as the first-story floor, to provide direct access to this track from the main corridor, the running track itself being developed into a gallery, the inner portion being arranged for seating spectators who may desire to witness exercises or games on the main floor below, while the running track encircles the outer edge, and is separated from the inner portion by a wire screen. This is believed to be an admirable feature, especially in a high school gymnasium, where parents and visitors constantly desire to witness the work and are in this way accommodated without in any manner disturbing or impeding any of the gymnasium work. There are 4 stairways, all of the double type, inclosed with wire glass. All corridors are floored with asphaltic concrete. The cost of this building is a little under $700,000 for general construction only, exclusive of site. The site cost over $360,000 and the supplemental contracts for furnishing the building are, in round numbers, as follows: Sanitary fittings, $56,000; gas fittings,



STUYVESANT HIGH SCHOOL NEW YORK C. B. J. SNYDER, ARCHITECT.



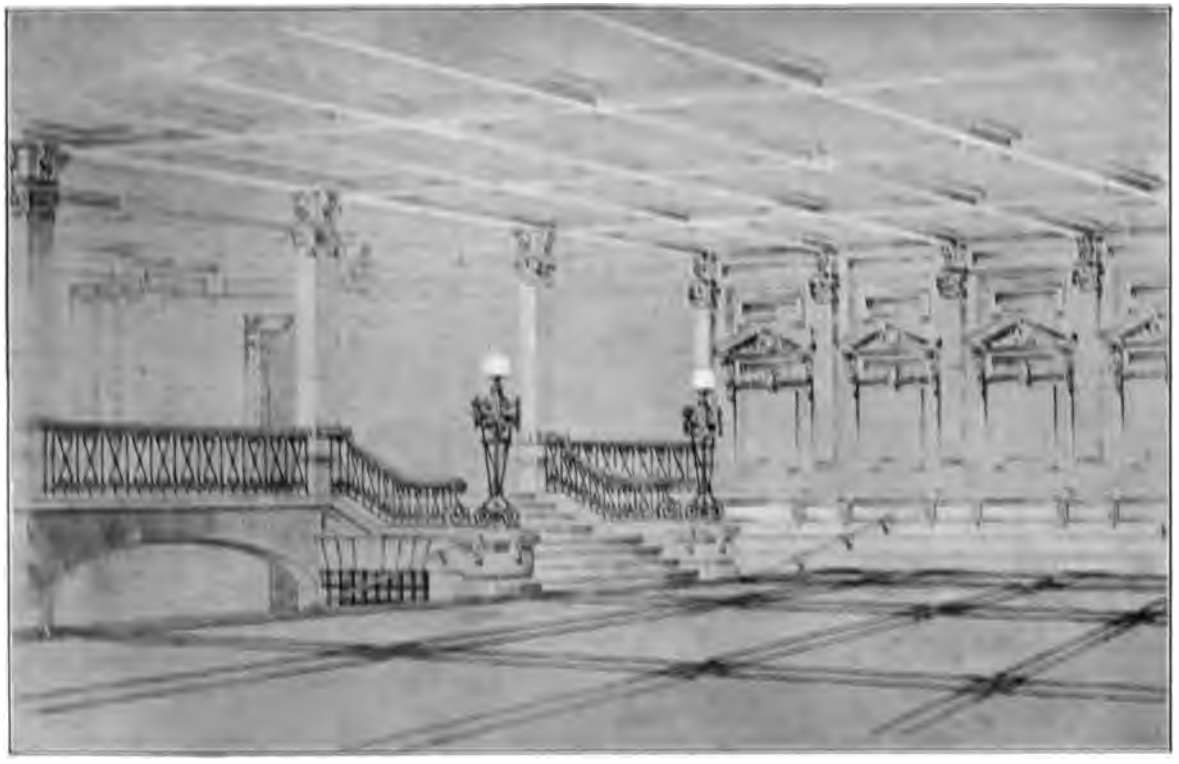
Floor plan



Second floor plan

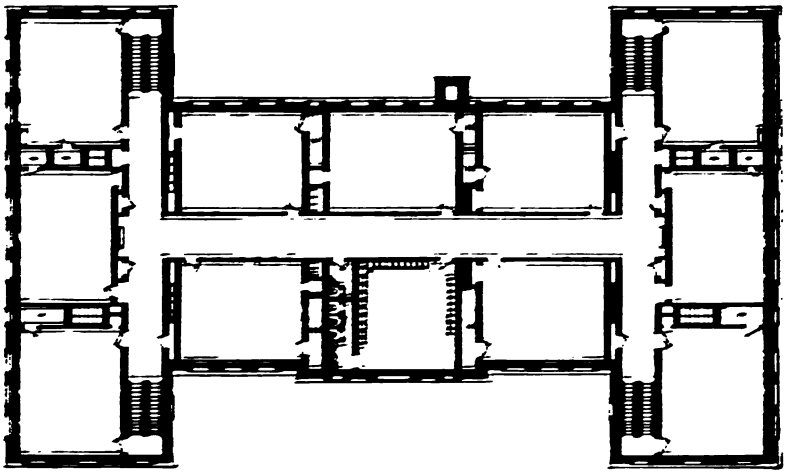
STUYVESANT HIGH SCHOOL NEW YORK

C. B. J. SNYDER
ARCHITECT



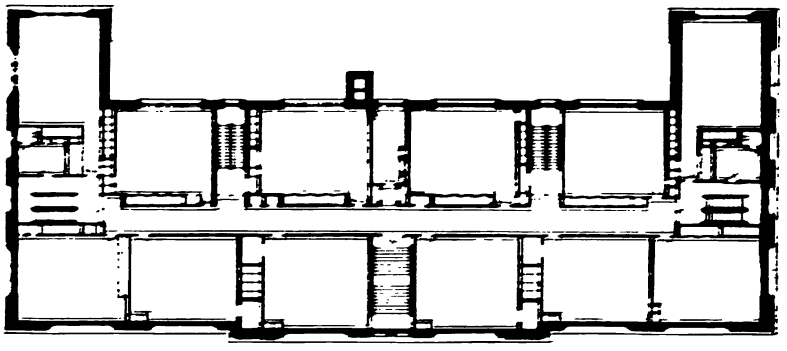
STUYVESANT HIGH SCHOOL, NEW YORK. C. B. J. SNYDER, ARCHITECT.
(Entrance hall.)

PUBLIC SCHOOL No. 84 LONG ISLAND CITY, C. B. J. SNYDER, ARCHITECT



PUBLIC SCHOOL NO. 84. LONG ISLAND CITY. C. B. J. SNYDER, ARCHITECT.

Second floor plan.



PUBLIC SCHOOL NO. 41. NEW YORK. C. B. J. SNYDER, ARCHITECT.

First floor plan.

PUBLIC SCHOOL No. 40 NEW YORK C. B. J. SNYDER, ARCHITECT

$2,600; heat, light, and power equipment, $87,000; electrical fittings, $41,000; mechanical fittings, $71,000; furniture and lockers, $123,000.

PUBLIC SCHOOL NO. 84, LONG ISLAND CITY.

The plan is shown of public school No. 84, Long Island City, which is given as differing from the normal New York type, not being of excessive size (36 class rooms) and as being suburban in character. The building is of 3 floors and basement, the basement containing play rooms, toilets, and heating and ventilating apparatus. The first story provides principal's office, medical inspector's room, 2 kindergartens, and 9 class rooms. The second story has 11 class rooms, with a large teachers' room, provided with toilets, and the third floor has 8 class rooms, cooking room, workshop, lunchroom, storeroom, etc. An open assembly room is formed on the third floor by omitting the partitions of the 6 central class rooms and providing temporary partitions in the shape of sliding doors. The corridors are a little wider than is usual in the New York schools, this being caused by the arrangement of the stairs, which are at the ends of the 2 side corridors, and the inside of the side tiers of the class rooms. The rooms in this building have outside light, the corner rooms having bilateral light. The cost of this building is slightly less than $250,000 for the building alone, exclusive of site and all fittings.

PUBLIC SCHOOL NO. 40, THE BRONX.

Another type of large school suitable for semiurban conditions in a rapidly growing city is public school No. 40, Borough of the Bronx. This building has been erected in the midst of a section where a transformation from 1-family buildings to apartment houses was rapidly taking place at the time the contract was let. As one instance of the problem in New York, it may be stated that within a radius of 500 yards of this building site, at the time the contract was let for its construction, 69 apartment houses were under construction, with total accommodations for over 800 families, or possibly over 4,000 people.

The building has a basement and 4 stories, with a cellar under the basement for boilers and storage for coal. The building is of the corridor type, having 6 class rooms on the front by 2 rooms deep, the end rooms in the rear being thrown back to provide space for stairways and administration rooms. The basement provides a large indoor playground, kindergarten rooms, and workshop, and on each of the 4 floors, 12 class rooms are provided, some rooms on the second and fourth floors being provided with sliding-door partitions, which can be thrown back, forming assembly halls. There are 4 flights of stairs besides the central entrance stairway on the first floor. The space occupied by this stair on the first floor forms a small extra

room on each floor above. The total cost of this building is slightly less than $350,000, exclusive of the site and all fittings.

PUBLIC SCHOOL NO. 30, RICHMOND.

A good type of building for suburban conditions has been erected in the Borough of Richmond, viz, public school No. 30, on the Boulevard, between Fisk and Wardwell avenues, illustrating a clean and compact arrangement of rooms and stairways. This building has a basement and 2 floors, the basement containing 2 playrooms, toilet rooms, heating and ventilating apparatus and coal-storage space. The first floor contains 6 large and 2 small rooms, the 4 central class rooms being arranged to be thrown into an assembly room. The second floor provides the same number of rooms, with partitions permanently fixed. The building is of slow-burning construction, but not fireproof, as most of the newer New York schools are, and cost, exclusive of site and fittings, about $86,000.

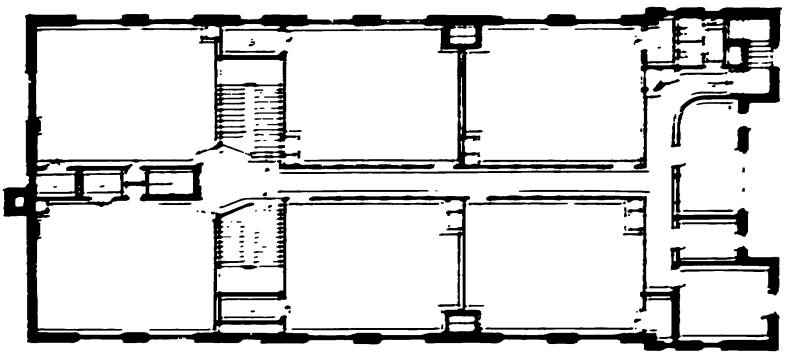
PARENTAL HOME SCHOOL, FLUSHING.

Plans are also given for the Parental Home School, in Flushing, which provides for a group of buildings for proper enforcement of the compulsory education laws against truants. The scheme provides for many more buildings than are now erected. The combined administration and school buildings, 3 dormitory buildings, power house, and farm buildings have now been built, as shown in solid black on the plans submitted herewith, through the courtesy of Mr. Snyder. These plans are sufficiently complete to be self-explanatory. The dormitories accommodate 60 boys, 30 in each half of the building, a half-building being considered as a unit. A dormitory building is designed so that the boys on entering their cottage from the schoolroom, work or play, pass directly through a hallway and into the basement, where their outdoor clothing is removed in a large, light dressing room, provided with lockers and seats, and also with drying apparatus, lavatories, shower baths, and toilets. Outdoor shoes are here removed and house slippers or moccasins donned, after which the boys are allowed access to the upstairs rooms. A more complete description of this installation will be found in the report of the superintendent of school buildings of New York City for the year 1906.

NEW TYPE—NEW YORK.

Plans are also shown for the latest type of school building developed in New York City during the past two years, for a semiurban locality where exposure is had on all sides. This is very similar to the public school No. 40, Borough of the Bronx, previously described, but differs by the introduction of an assembly hall accessible to the

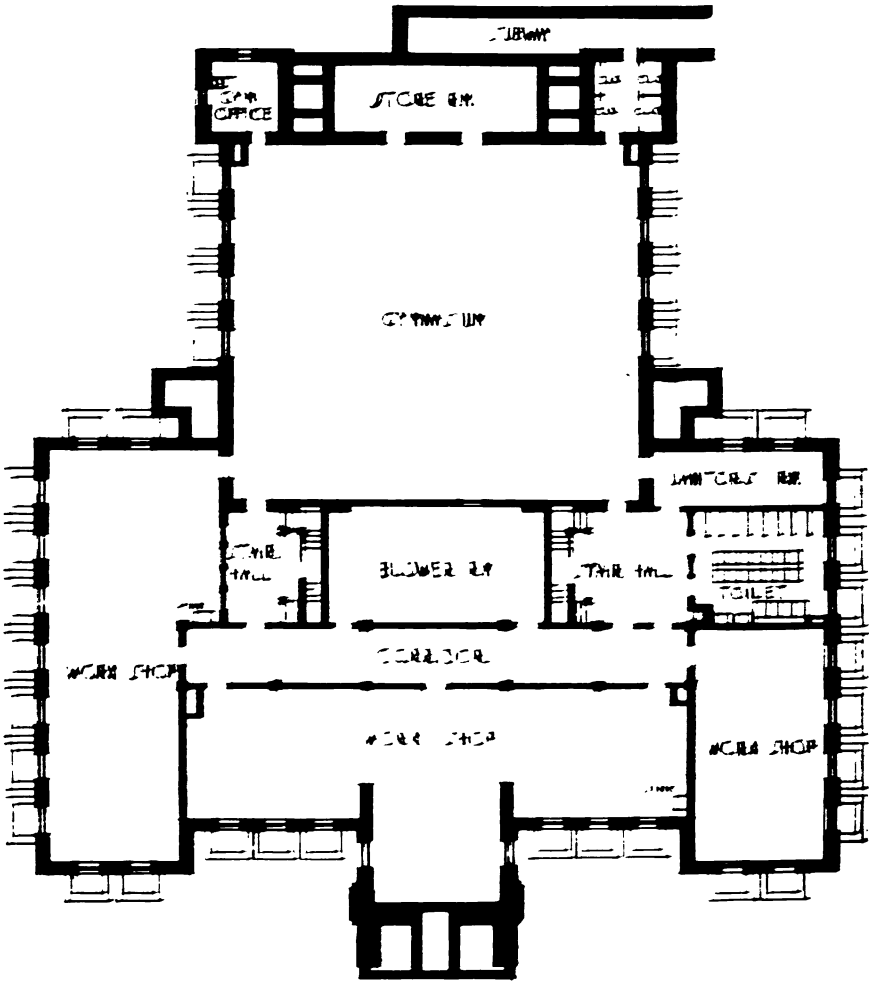
PUBLIC SCHOOL NO. 35 RICHMOND BOROUGH. C. B. J. SNYDER, ARCHITECT



PUBLIC SCHOOL NO. 35 RICHMOND BOROUGH C. B. J. SNYDER, ARCHITECT

[illegible] PERSPECTIVE [illegible] C. H. [illegible] SNYDER, ARCHITECT

(PRINCIPAL VIEW)



Basement plan, administration building.

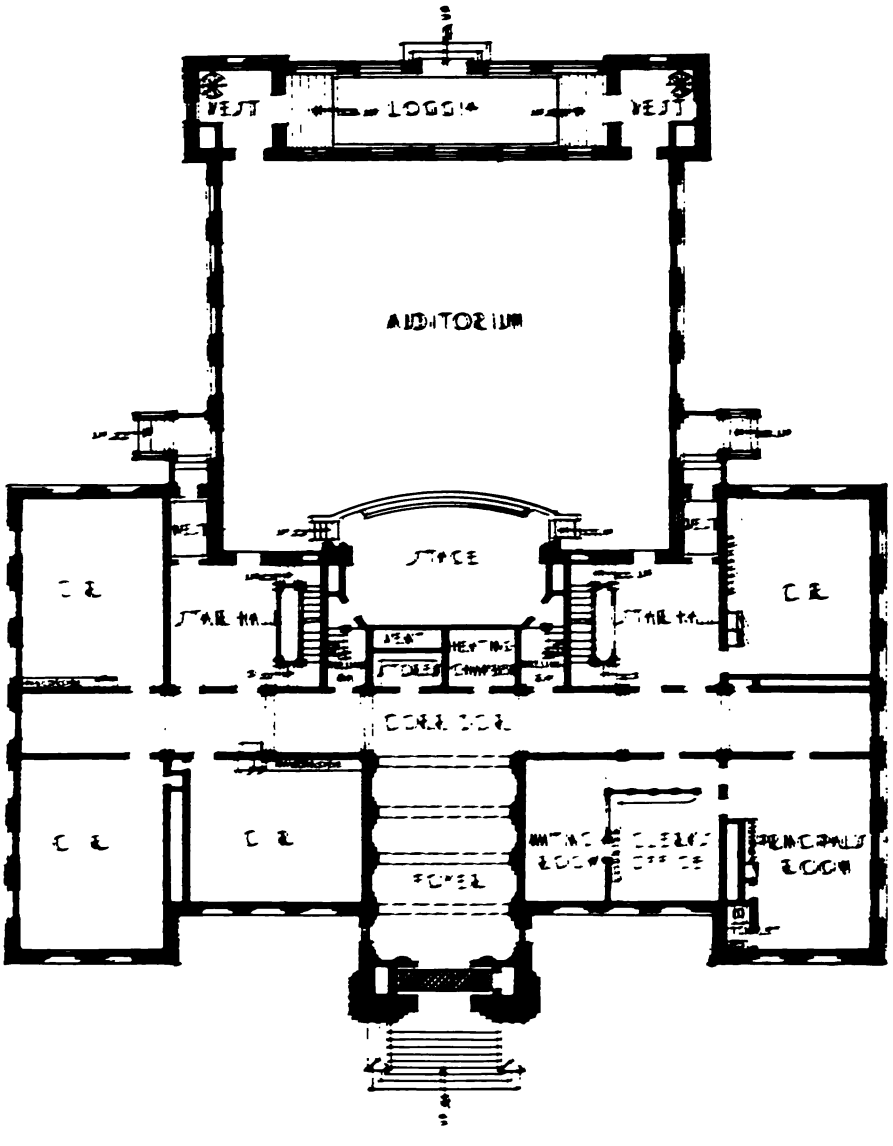
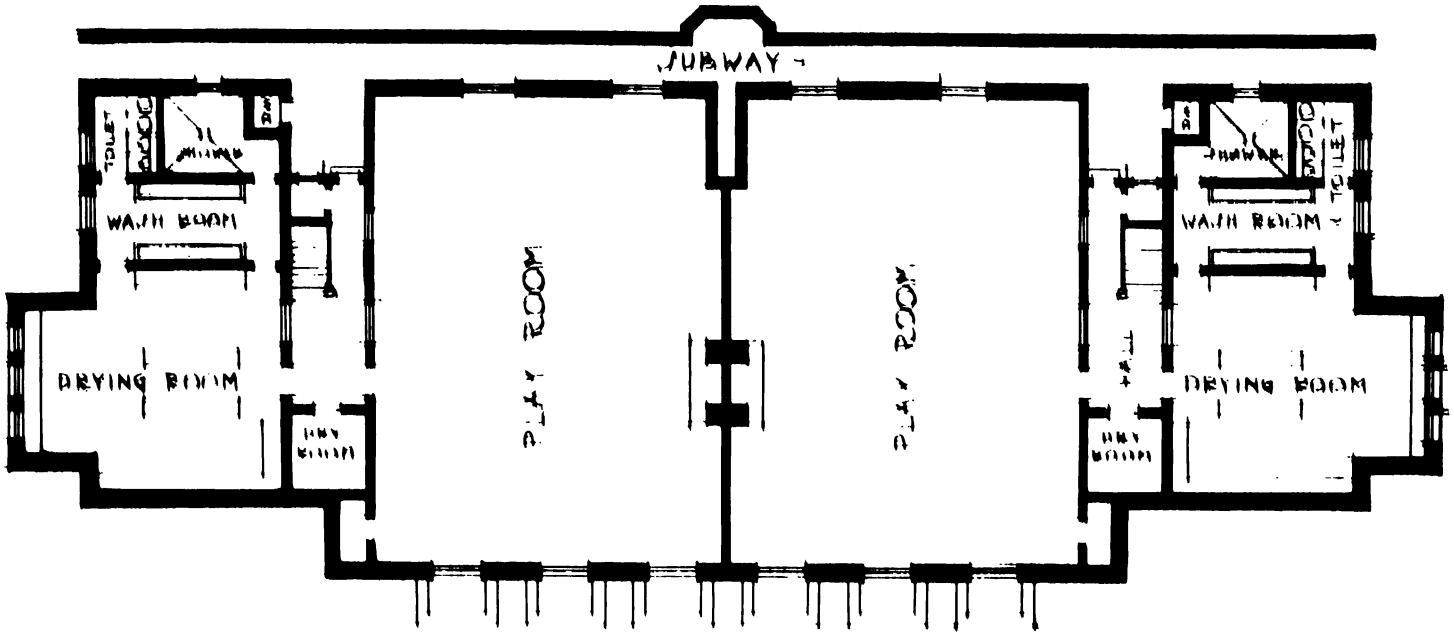


Fig. 1. Plan of Administration Building.

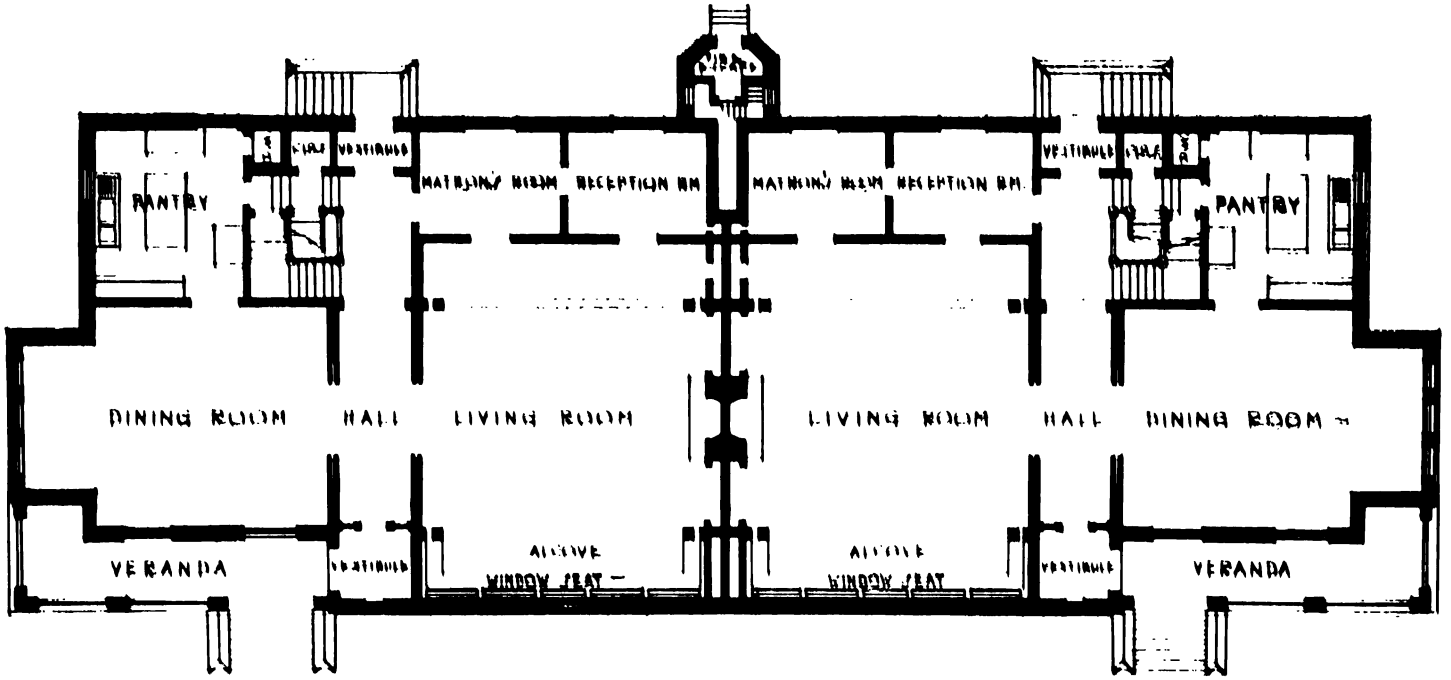


PARENTAL HOME SECTION

FLUSHING

(Basement plan, Dormitory Building)

C. B. J. SNYDER, ARCHITECT

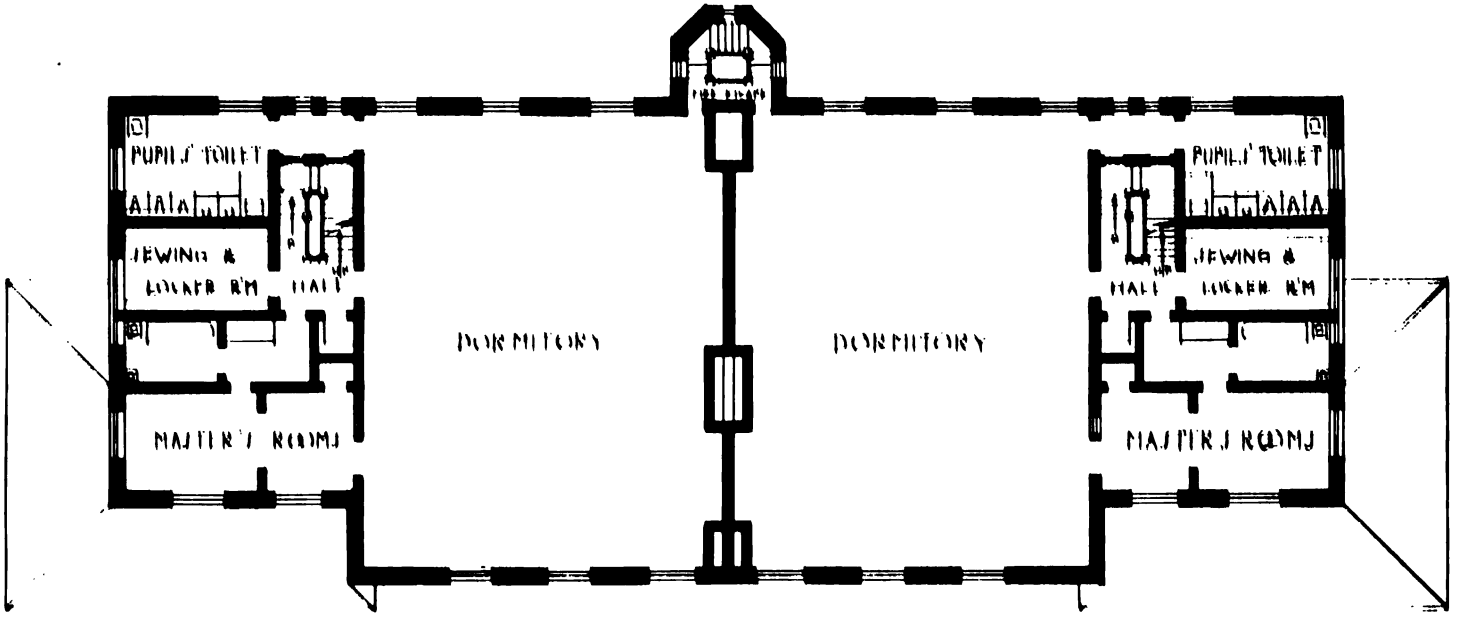


PARENTAL HOME ROOMS.

FLOORING

(First floor plan, Dormitory Building.)

O. H. J. ANYBEN,
ARCHITECT.

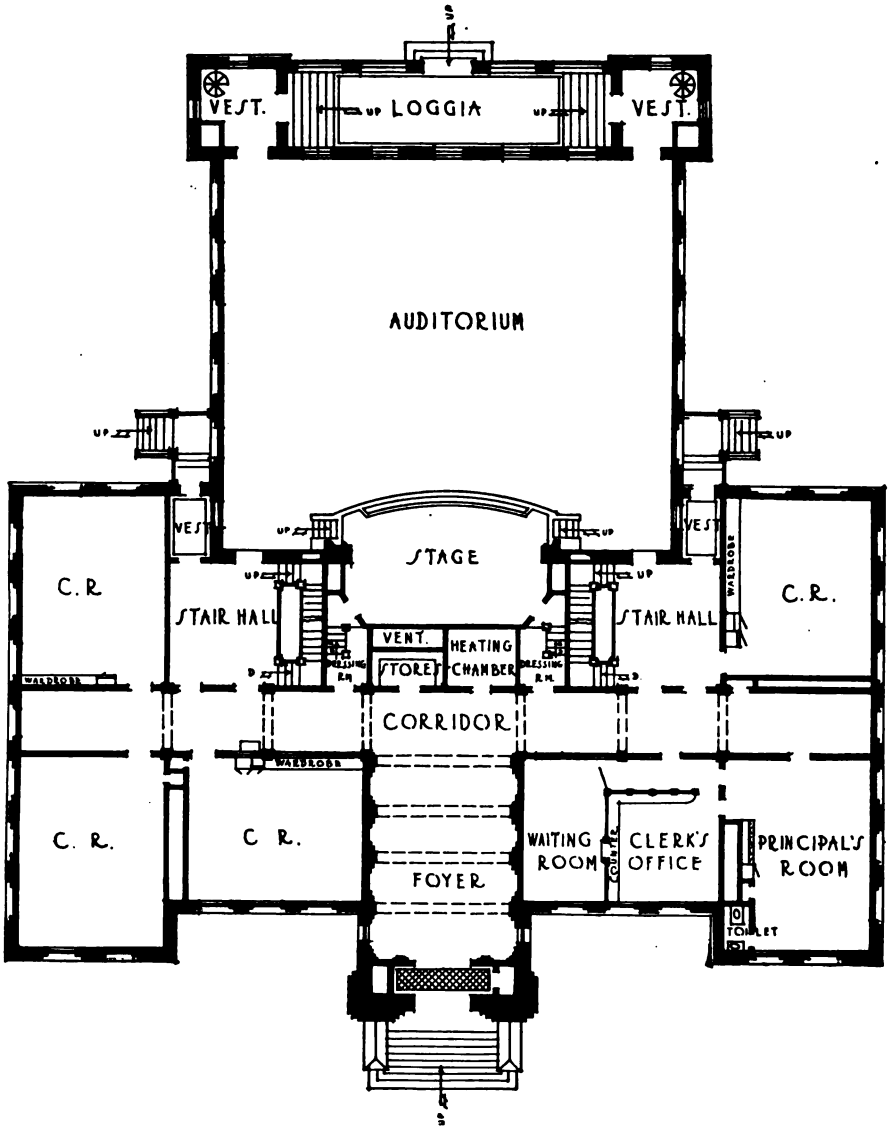


PARENTAL HOME SCHOOL

FLOORING

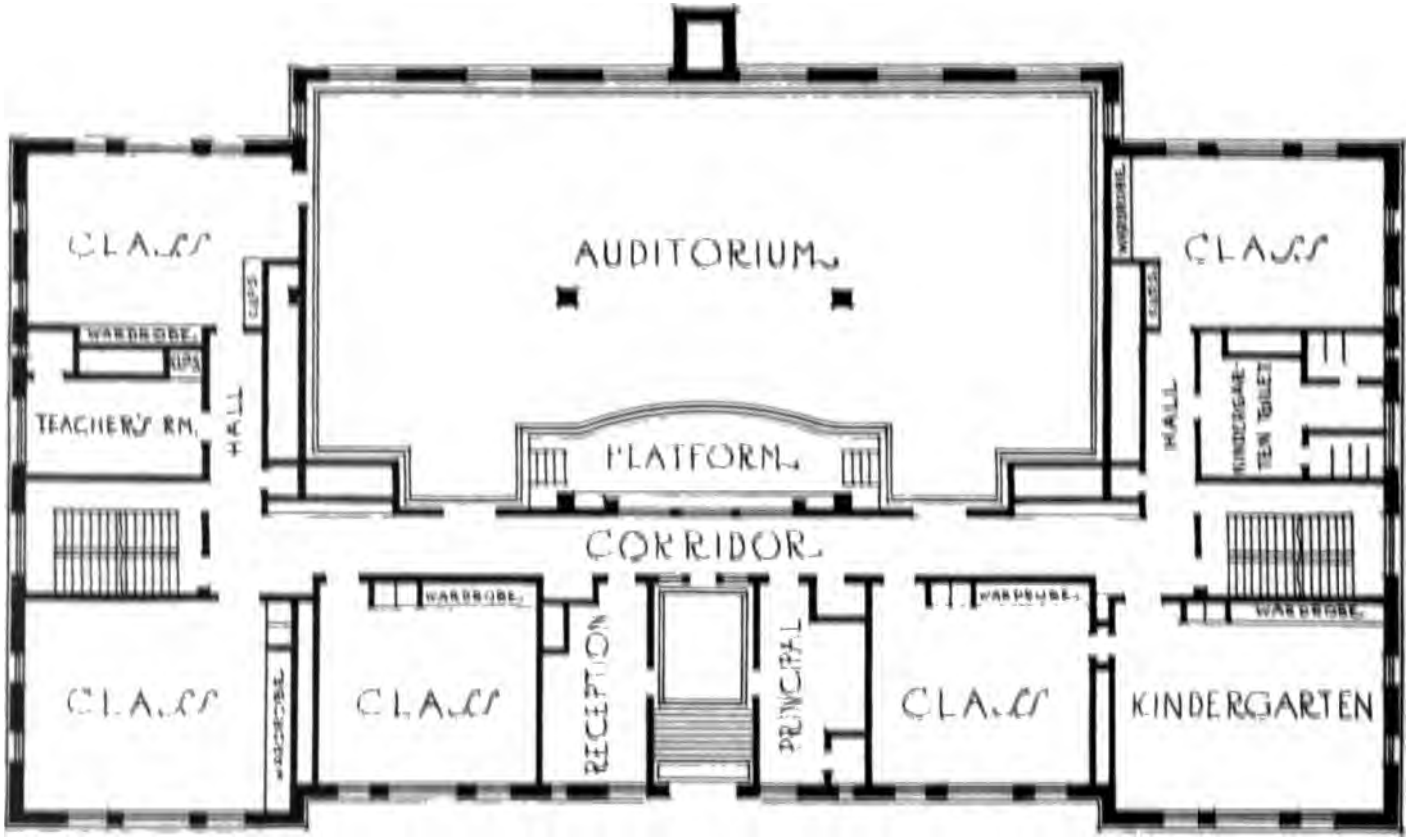
(Second floor plan Dormitory Building)

C. H. J. SNYDER,
ARCHITECT



PARENTAL HOME SCHOOL. FLUSHING. C. B. J. SNYDER, ARCHITECT.

(First floor plan, Administration Building.)

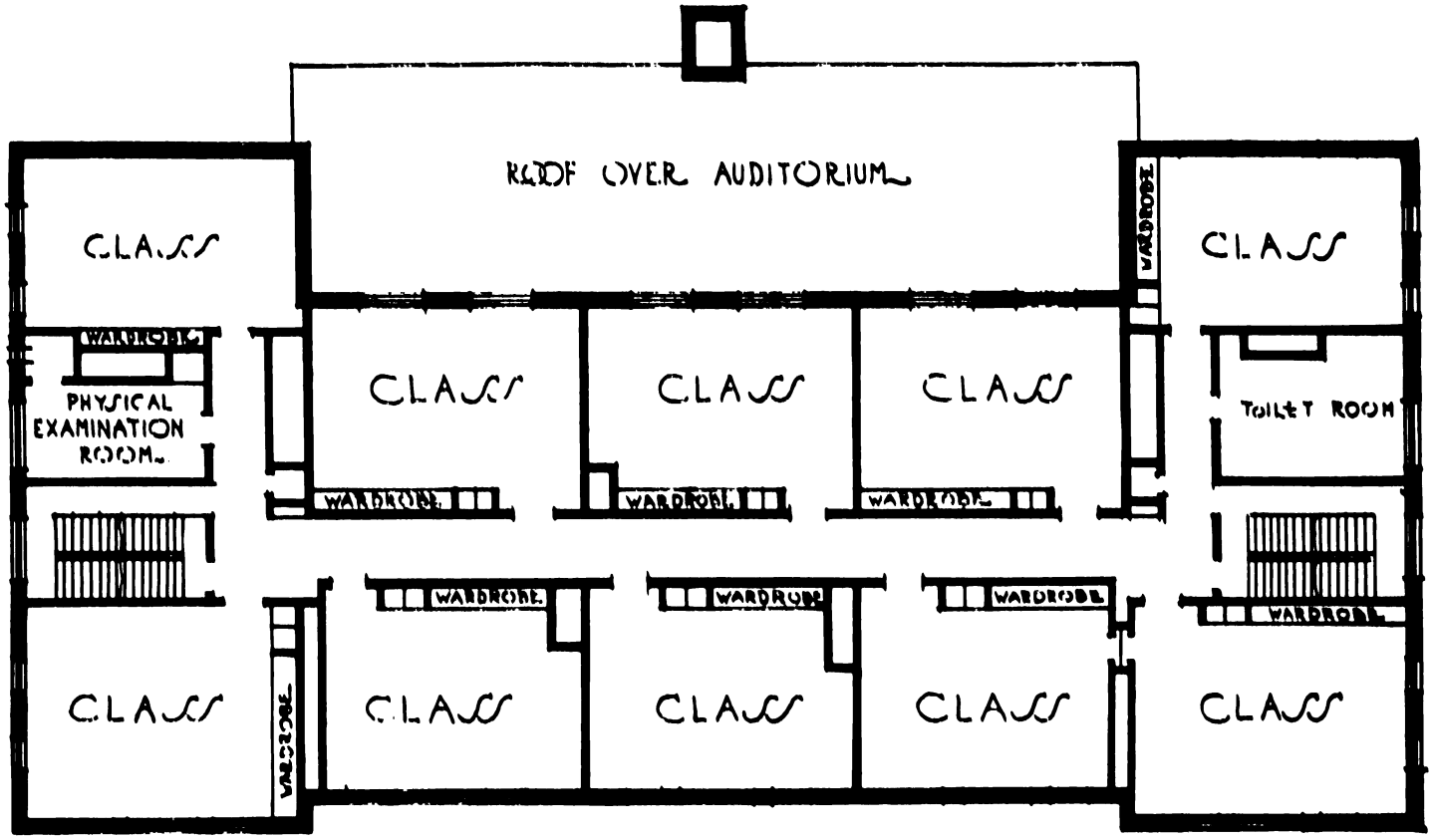


NEW TYPE SCHOOL

NEW YORK.

(First floor plan.)

A. B. J. SNYDER, ARCHITECT.

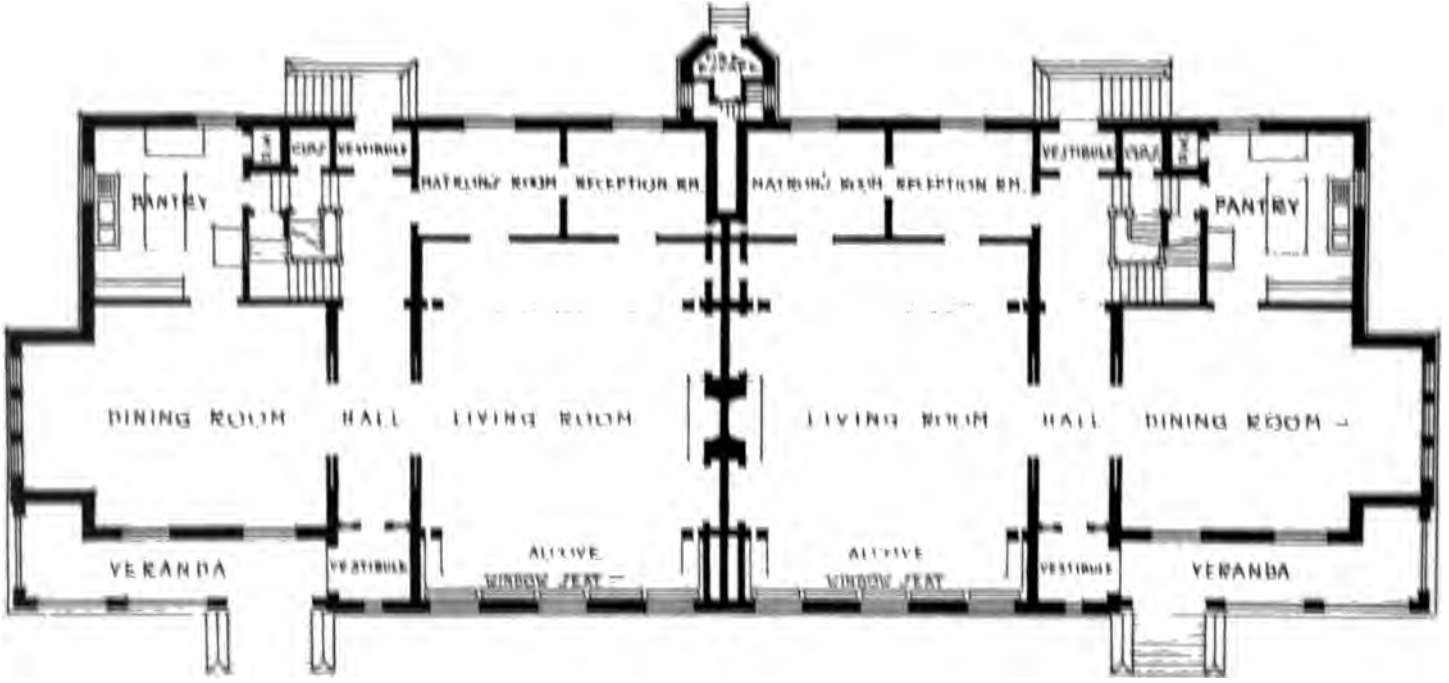


NEW TYPE SCHOOL.

NEW YORK.

(Second floor plan.)

C. B. J. SNYDER, ARCHITECT.

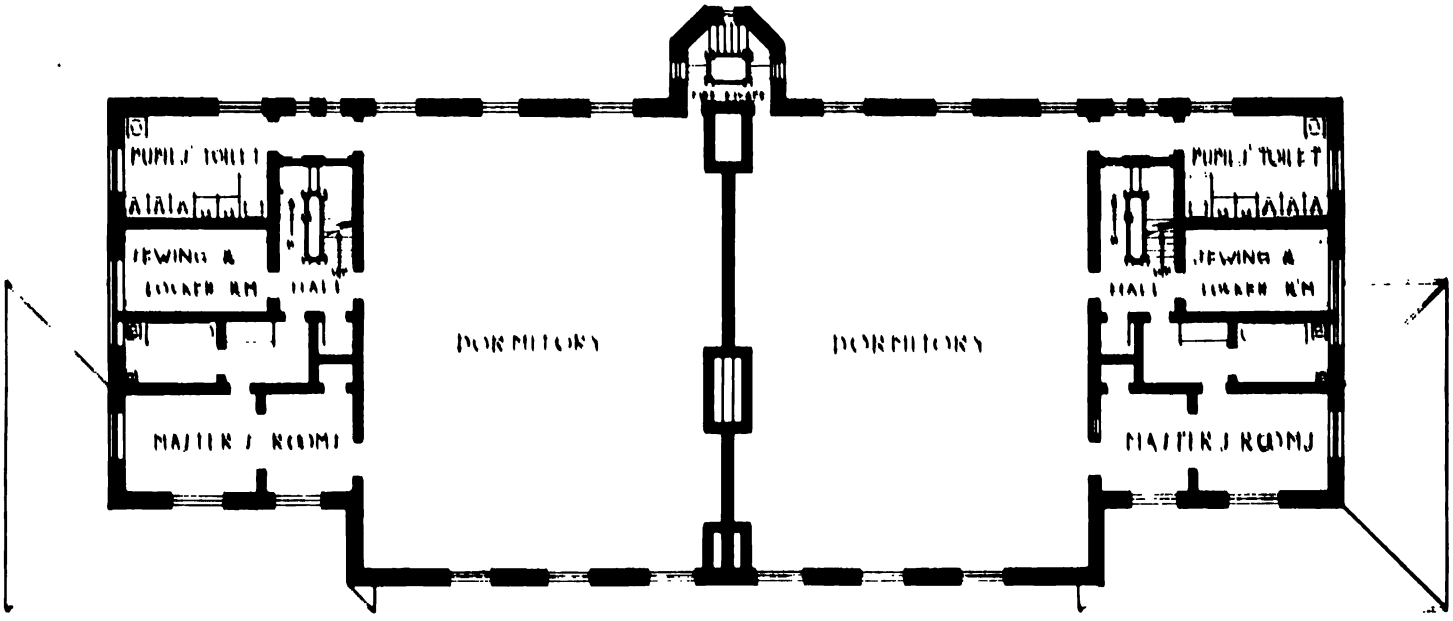


PARENTAL HOME BUILDING

FLOORING

(First floor plan, Dormitory Building.)

C. H. J. SNYDER,
ARCHITECT.

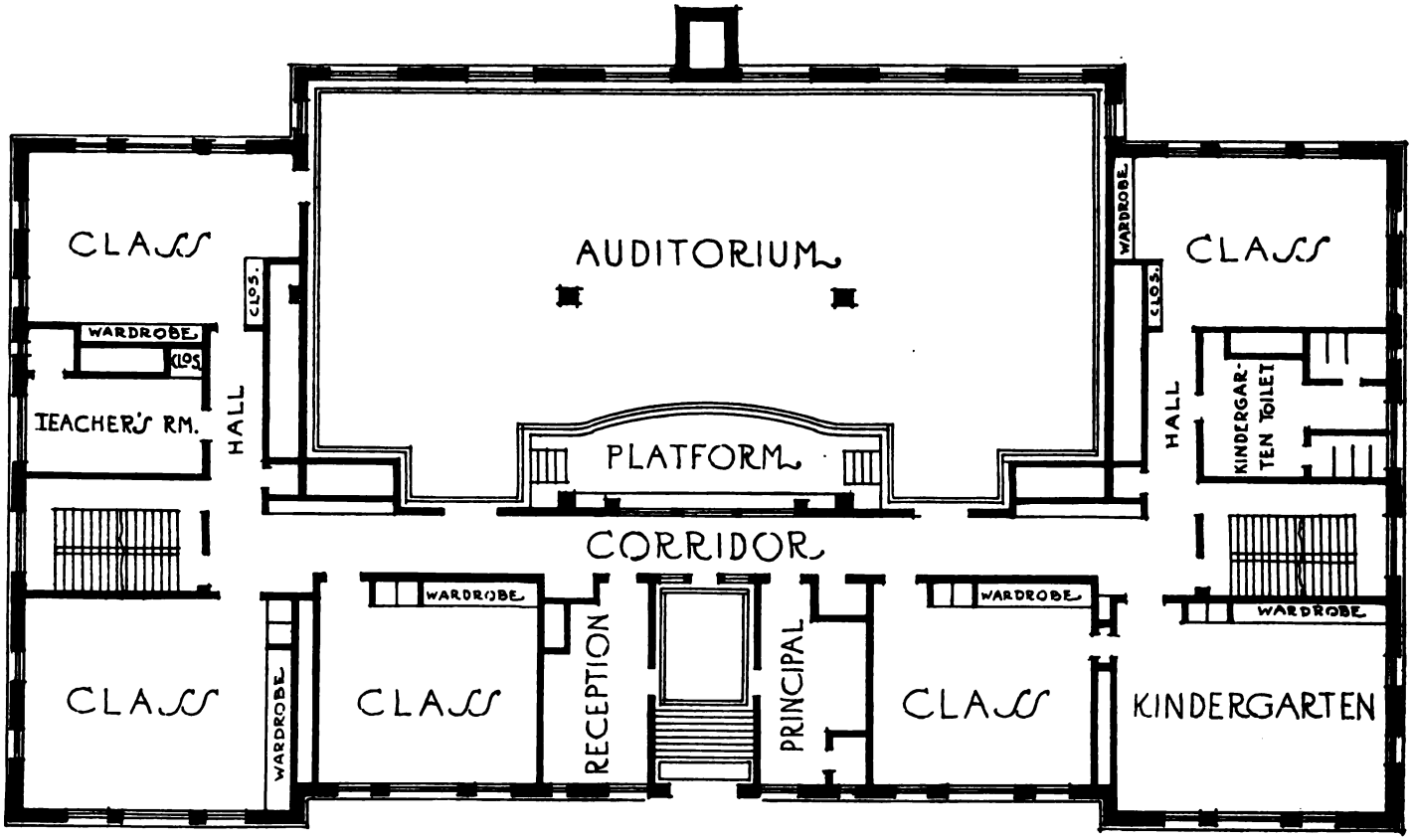


PARENTAL HOME PROJECT

PLUMBING

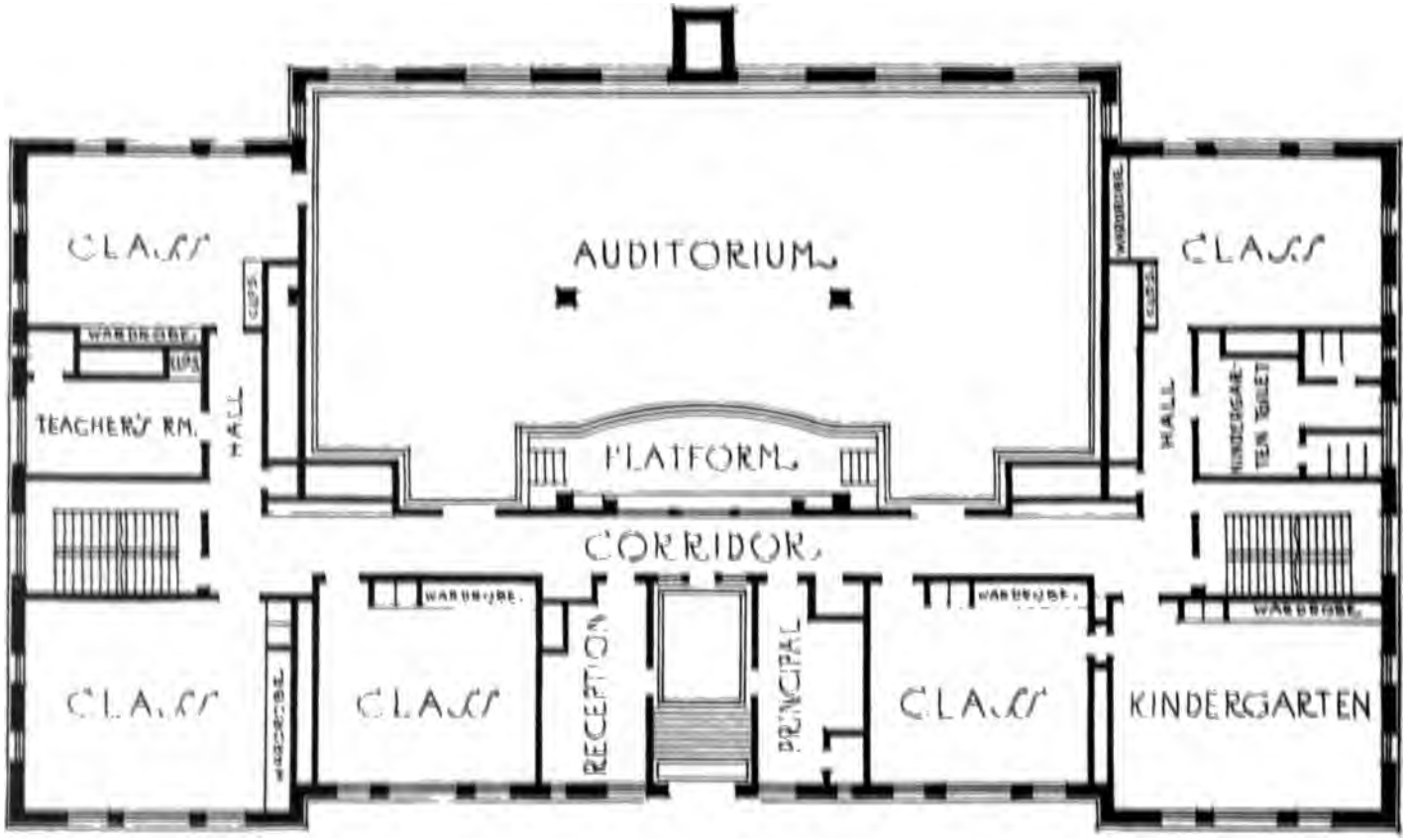
(Second floor plan Dormitory Building)

C. H. J. SNYDER,
ARCHITECT



NEW TYPE SCHOOL. NEW YORK. C. B. J. SNYDER, ARCHITECT.

(First floor plan.)

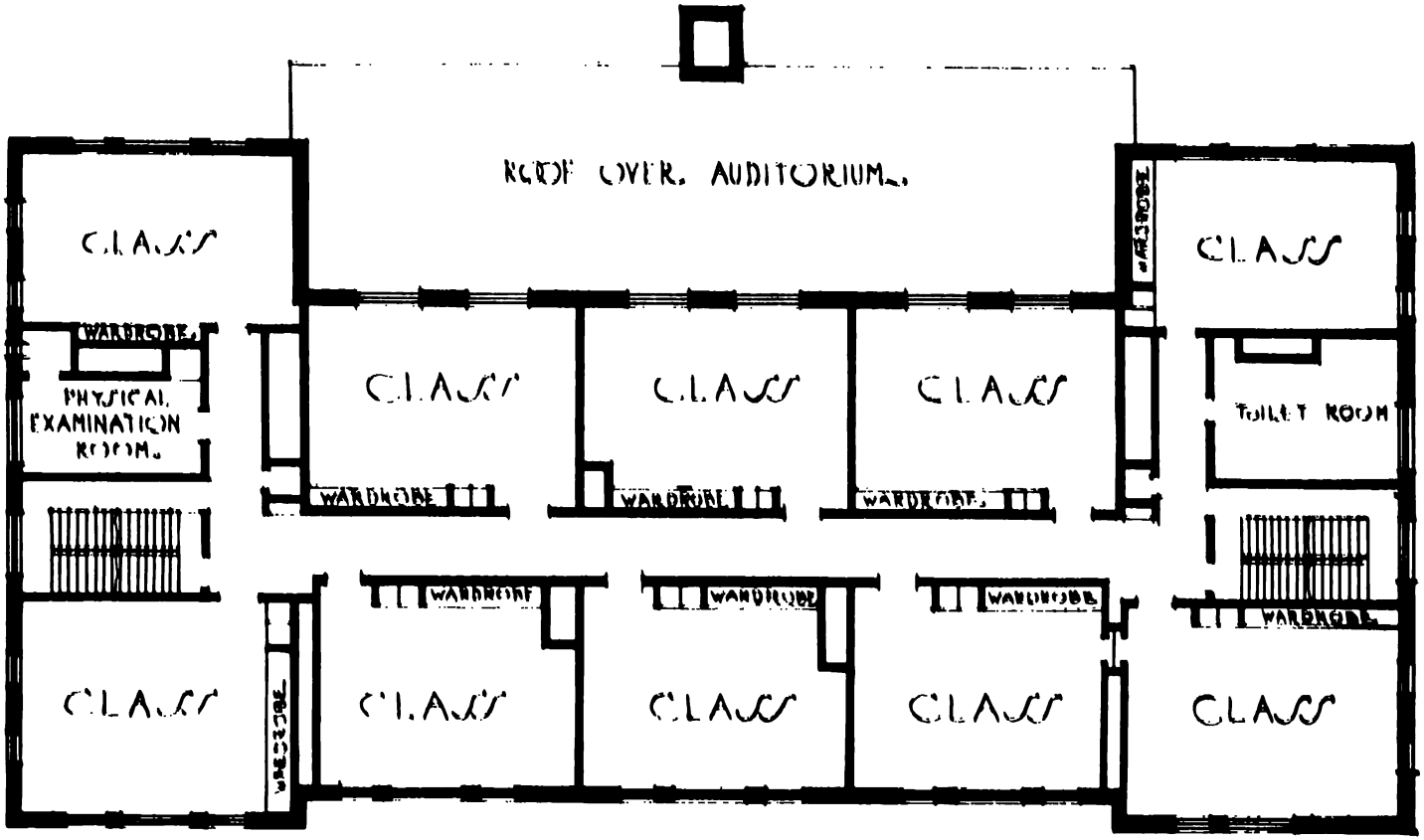


NEW TYPE SCHOOL

NEW YORK.

(First floor plan.)

C. B. J. SNYDER, ARCHITECT.

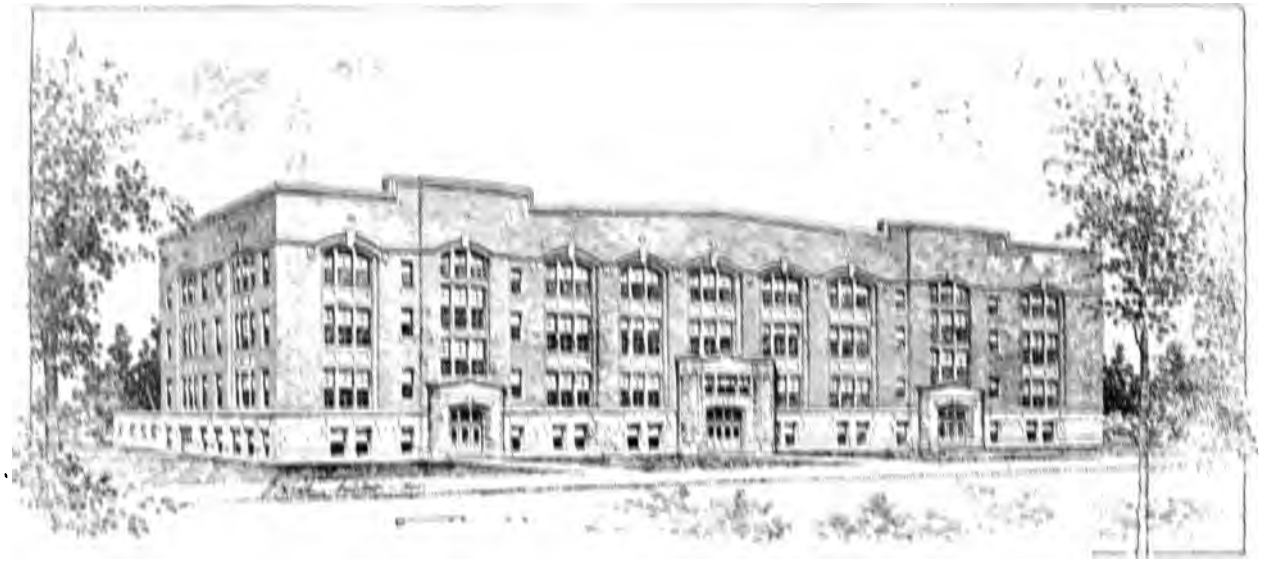


NEW TYPE BUILDING.

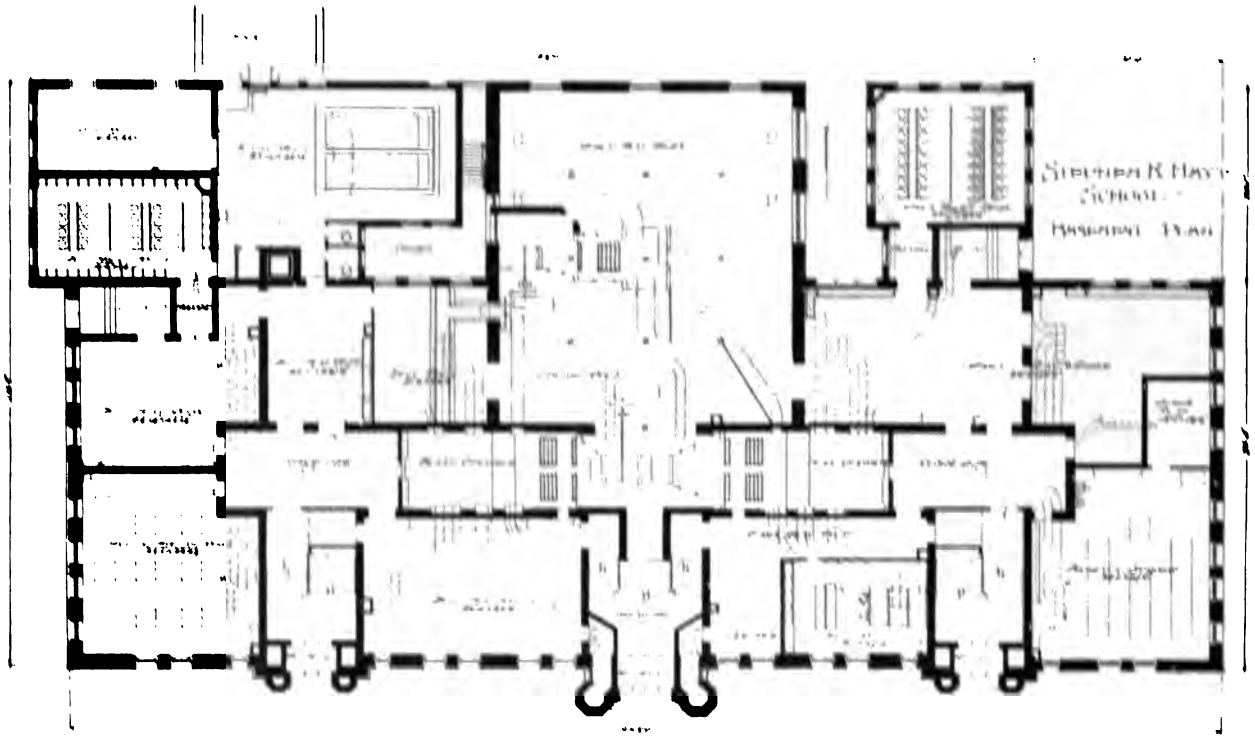
NEW YORK.

(Second floor plan.)

C. B. J. SNYDER, ARCHITECT.

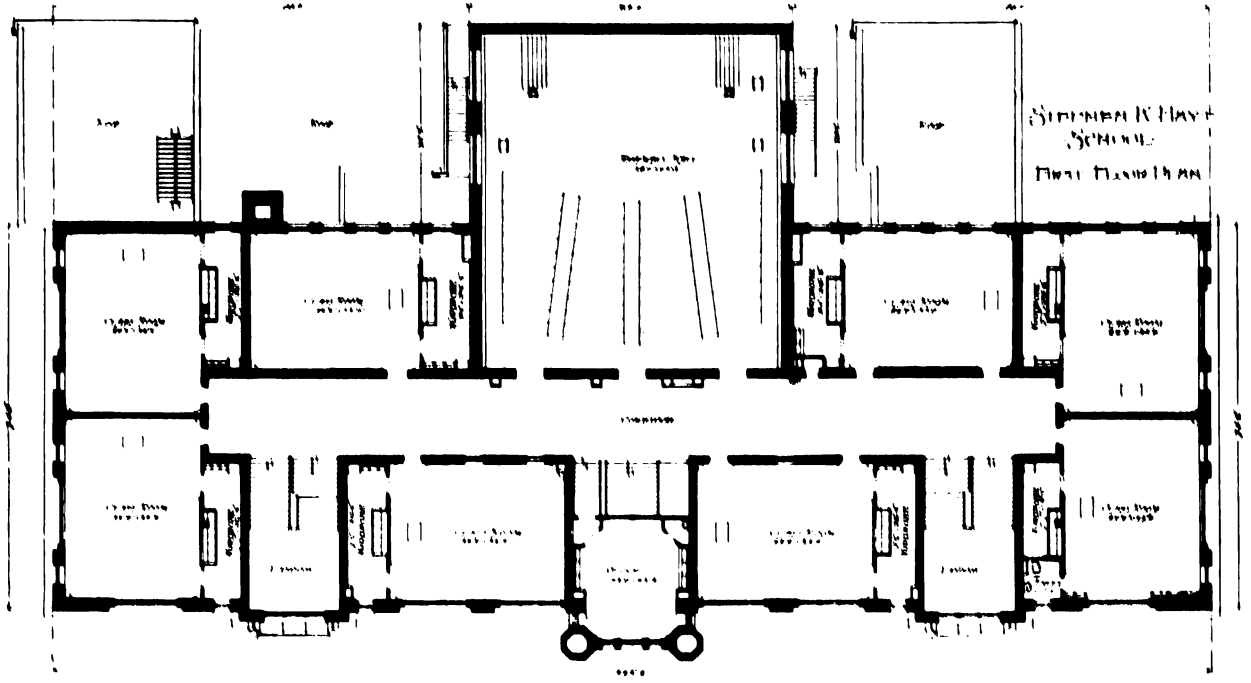


STEPHEN K. HAYT SCHOOL, CHICAGO. D. H. PERKINS, ARCHITECT.



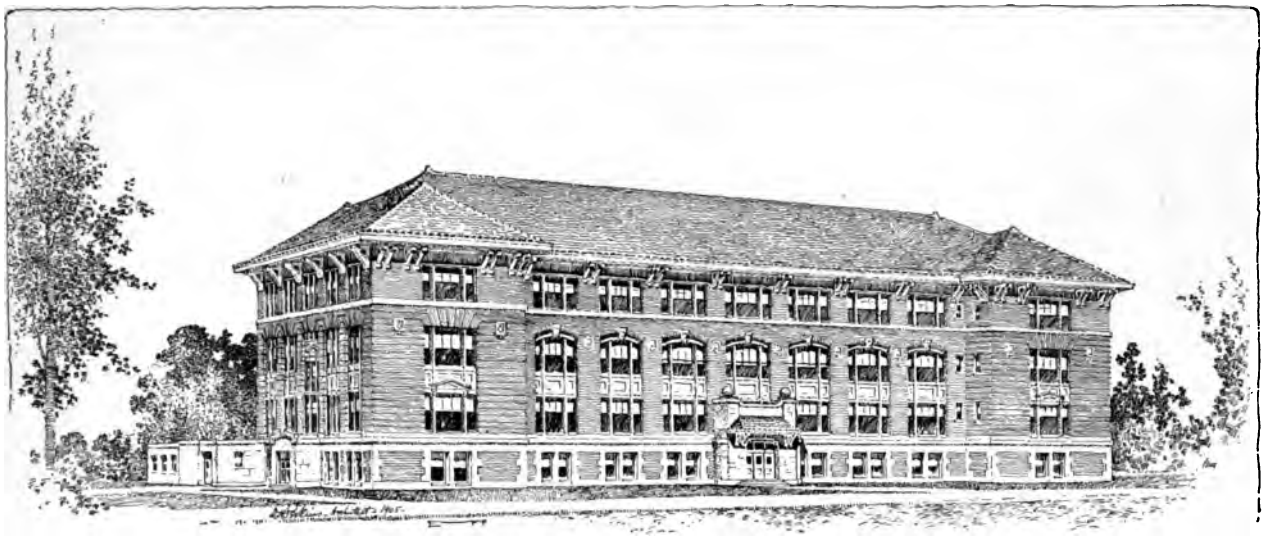
STEPHEN K. HAYT SCHOOL — CHICAGO — D. H. PERKINS, ARCHITECT.

(Basement plan.)

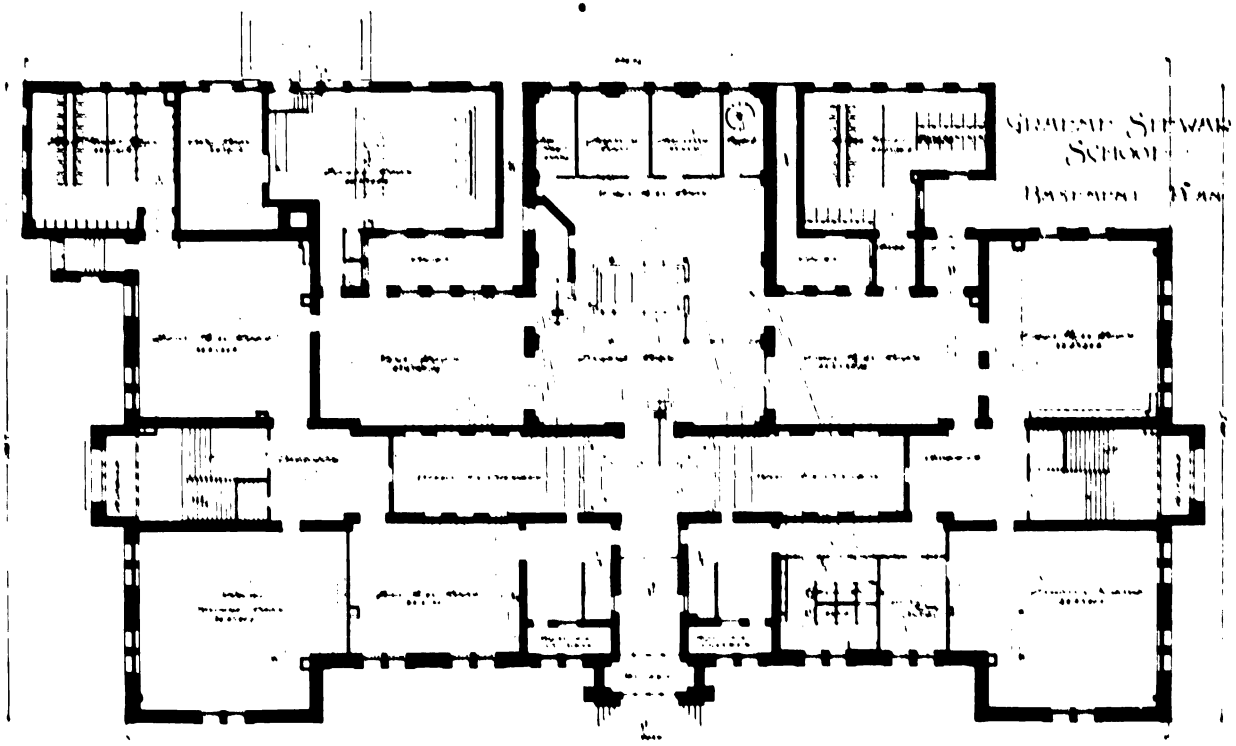


STEPHEN K. HAYT SCHOOL. CHICAGO. D. H. PERKINS, ARCHITECT.

(First floor plan.)

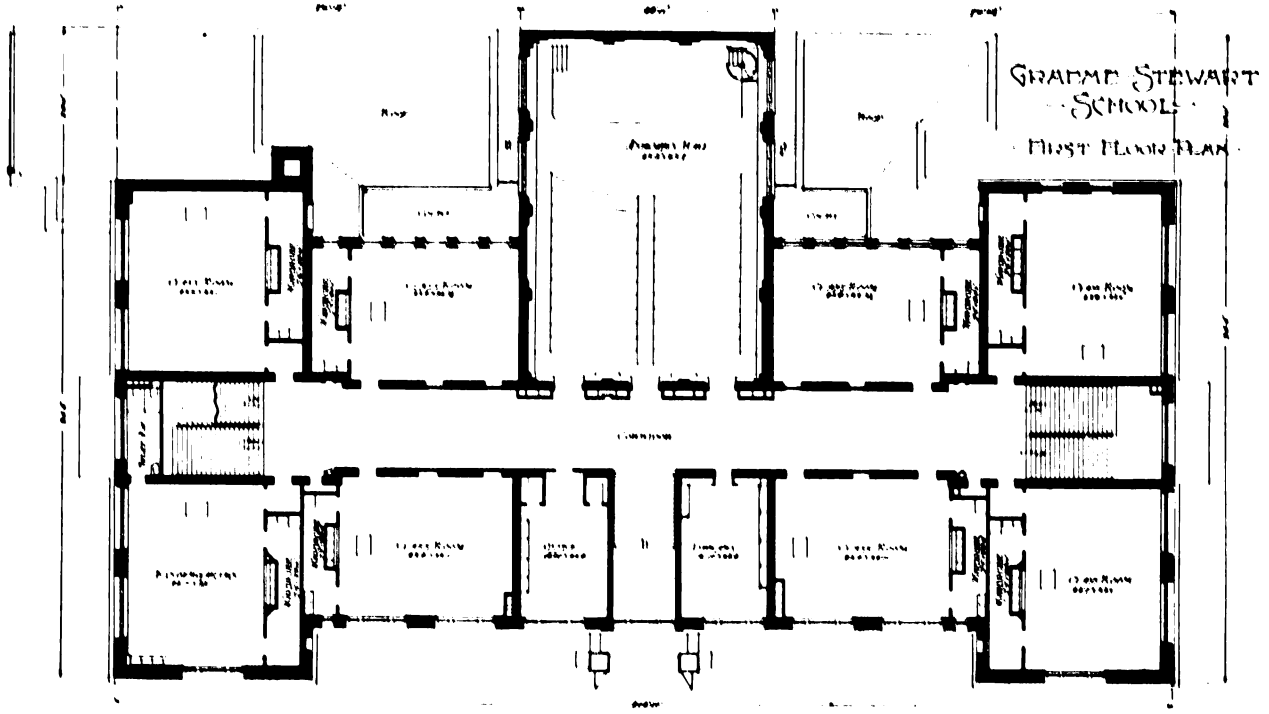


GRAEME STEWART SCHOOL. CHICAGO. D. H. PERKINS, ARCHITECT.



GRAEME STEWART SCHOOL. CHICAGO. D. H. PERKINS, ARCHITECT.

(Basement plan.)



GRAEME STEWART SCHOOL. CHICAGO. D. H. PERKINS, ARCHITECT.

(First floor plan.)

general public, without the necessity of going through the corridors of the building. A floor plan is designed with 10 class rooms for each floor, excepting that the center front room on the first floor is thrown into an entrance hall, principal's office and reception room, and the 3 rear class rooms on this floor are done away with. The wall is moved back so that an inclosed space is provided, about 50 by 90 feet, obstructed by only 2 columns near the center, which are used to support the rear wall of the building above this floor, an assembly hall being thus formed seating about 650, lighted by large skylights in the roof and 4 windows at the rear, the platform being placed next to the corridor, so that the children do not face the light. Entrance is had through the main entrance hall and the corridor, with special exits by 2 doorways at the rear of the hall and by a short flight of steps leading directly outdoors. The building thus gives, in addition to the assembly hall, 6 class rooms on the first floor and 10 on each succeeding floor, all of the rooms having ample outside light and the corridor being end-lighted. The typical New York double stairs are used. Plans of this type are given.

The Commission acknowledges its indebtedness for these complete plans to Mr. C. B. J. Snyder, superintendent of school buildings, of New York.

SCHOOL BUILDINGS OF CHICAGO.

The Chicago schools have been developed in part along the New York block plan. The grammar schools in Chicago of recent design may be regarded in many ways as model buildings. Three of them are shown herewith.

STEPHEN K. HAYT SCHOOL.

The Stephen K. Hayt School, with basement and 3 floors, has in the basement toilet rooms, boiler and engine rooms, 2 large girls' play rooms and 3 smaller boys' play rooms, a manual training room, and a domestic science room. Three front entrances are provided, the stairs leading from them up and down. The first floor provides principal's offices, assembly room, and 8 schoolrooms, each of which is provided with a separate wardrobe. The upper floors contain the same number of class rooms, the second floor having assembly room gallery and the third floor gymnasium in the space occupied by the assembly hall.

GRAEME STEWART SCHOOL.

The Graeme Stewart School type is similar to the Stephen K. Hayt School type excepting that the 2 side stairways are removed to the end of the corridor. The Hayt type lends itself better to the extensible idea, as 6 rooms can be added at each end of a 12-room building, allowing it to be conveniently extended, with the growth of the

section, to 24 rooms. The Graeme Stewart type is more economical of space in its ultimate solution, providing more office, library, and teachers' rooms in the same space. The corridors in the Hayt School type are much better lighted than would appear from the plans, indirect light being had through the class rooms by interior windows. The other type is better lighted by direct light from the stair space.

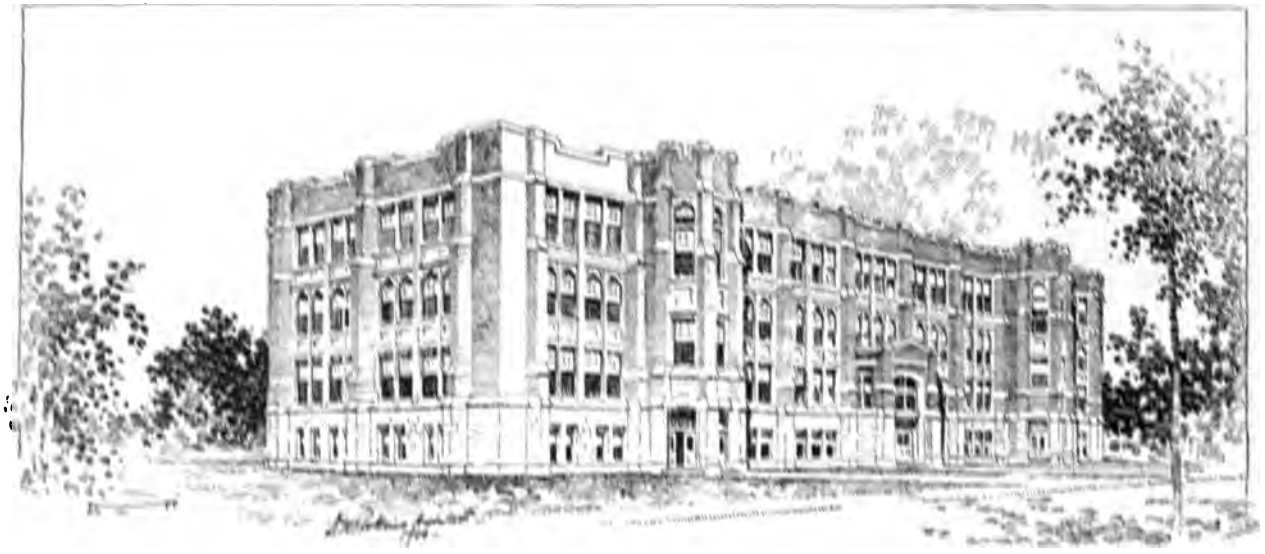
BERNHARD MOOS SCHOOL.

The Bernhard Moos type is shown, together with a ground plan showing an admirable arrangement of playground space. This building, while to-day built in Chicago entirely as a finished building, is a fine example of the extensible type. The building may be completed with 4 rooms for each floor of 3 floors, and with assembly hall in the first and second floors, and gymnasium in the third, with boiler and coal rooms almost detached from the building under and in rear of the assembly hall. The toilet space and play room space are provided for in a 12-room building, and each floor has both boys' and girls' toilet, the same being separated from the main corridor by passageways opening into an inclosed open-air court. The building can then be enlarged by the addition at either end, of 2 class rooms to each floor, the basement floors giving large rooms for manual training at one end and domestic science at the other, allowing for an ultimate expansion into an admirable 24-room building, the corridors in the completed building being remarkably well lighted for corridors which do not run entirely through the building. The secondary light through the wardrobes provided for end class rooms is exceptionably good.

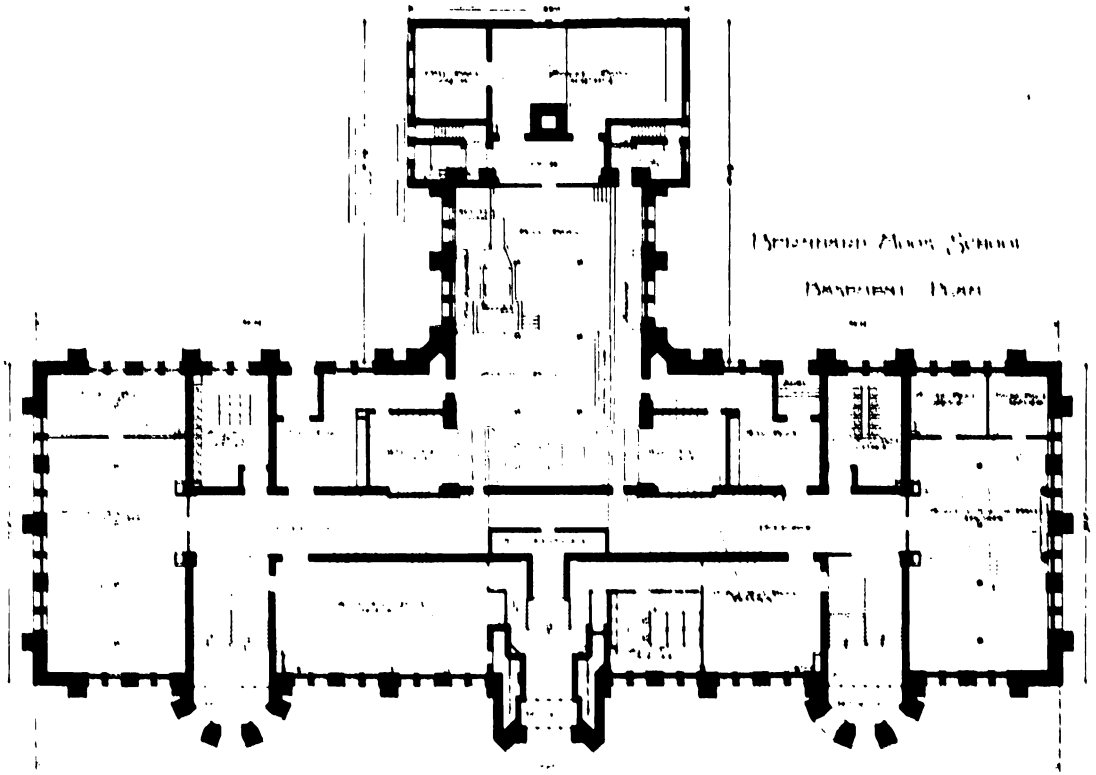
Mr. Perkins has also worked out a new type for a large public school building which is a development of the New York block plan, occupies a complete lot of about 300 feet square, contemplates having a low basement given up to heating apparatus, the first floor on the street level, with the assembly hall in the center, wholly lighted through the ceiling, and the rooms surrounding it being class rooms, play rooms, toilets, etc., many of which would ordinarily be in the basement. Some play rooms are equipped as gymnasiums. Above the second floor this building is lighted from the court on which the corridors face, the class rooms being lighted from the outside. There are 16 rooms to a floor and toilets are provided on all floors. This plan is, however, suitable for a school of such size as would seldom be contemplated in Washington. The three previous examples, however, are regarded as admirable types for a 24-room school of 3 stories and basement, or for a sixteen-room school if built of 2 stories.

NEW TYPE—TILTON SCHOOL.

Perspective and plans are also shown of the latest type of schools in Chicago—a plan with many admirable features.

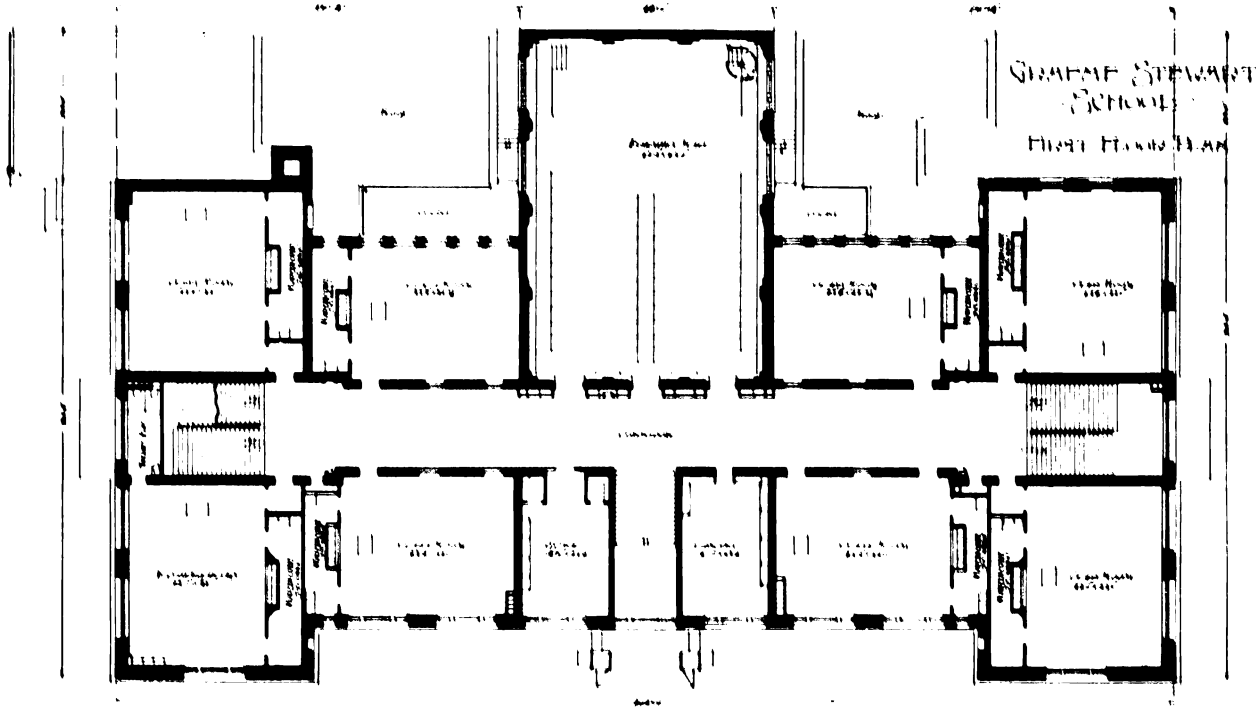


BERNHARD MOOS SCHOOL, CHICAGO. D. H. PERKINS, ARCHITECT.



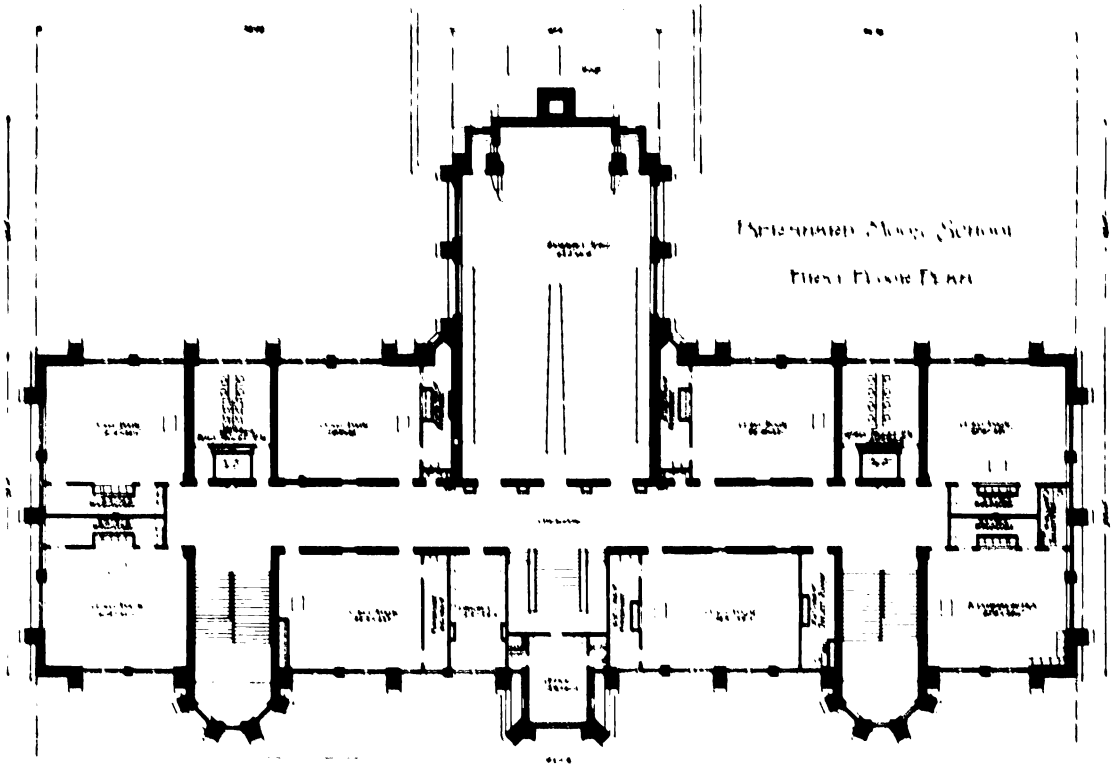
BERNHARD MOOS SCHOOL. CHICAGO. D. H. PERKINS, ARCHITECT.

(Basement plan.)



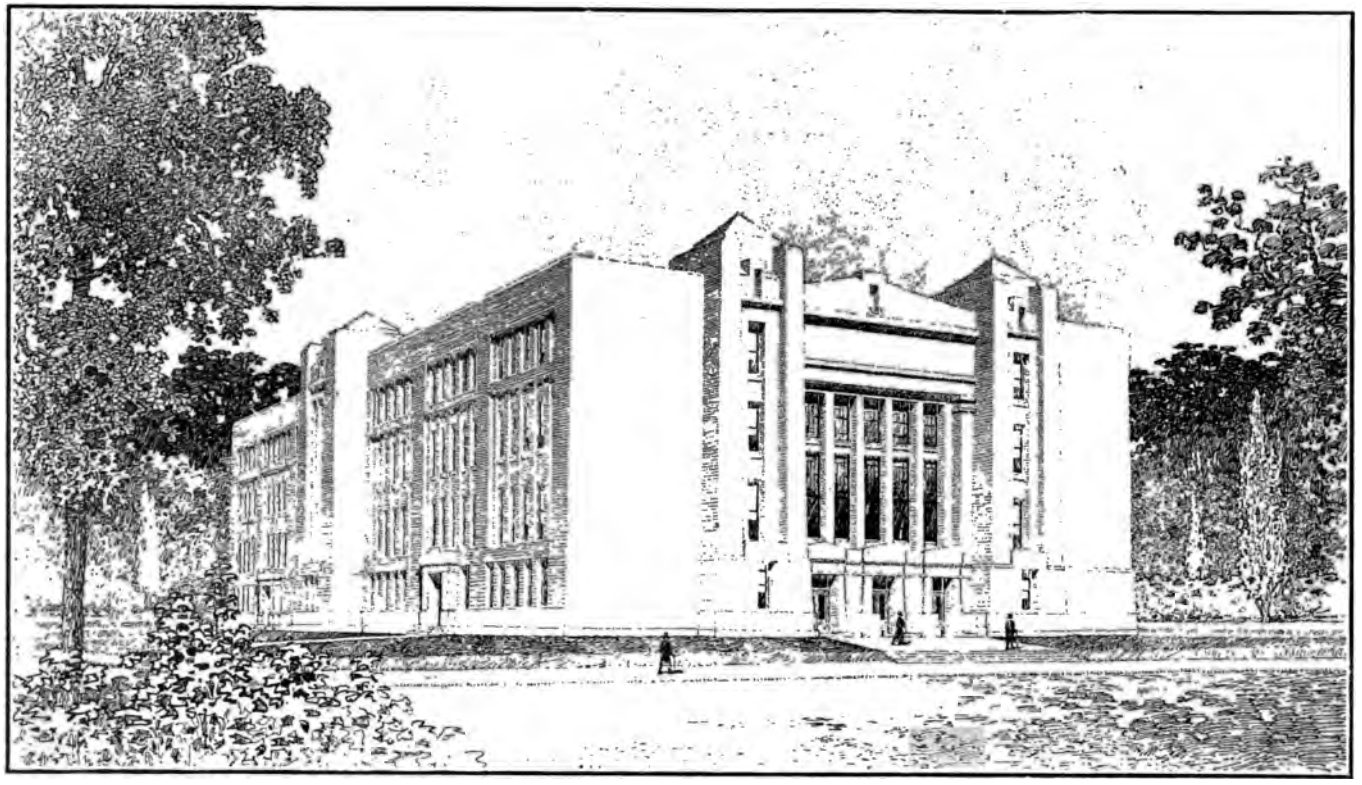
GRAEME STEWART SCHOOL, CHICAGO, D. H. PERKINS, ARCHITECT.

(First floor plan.)

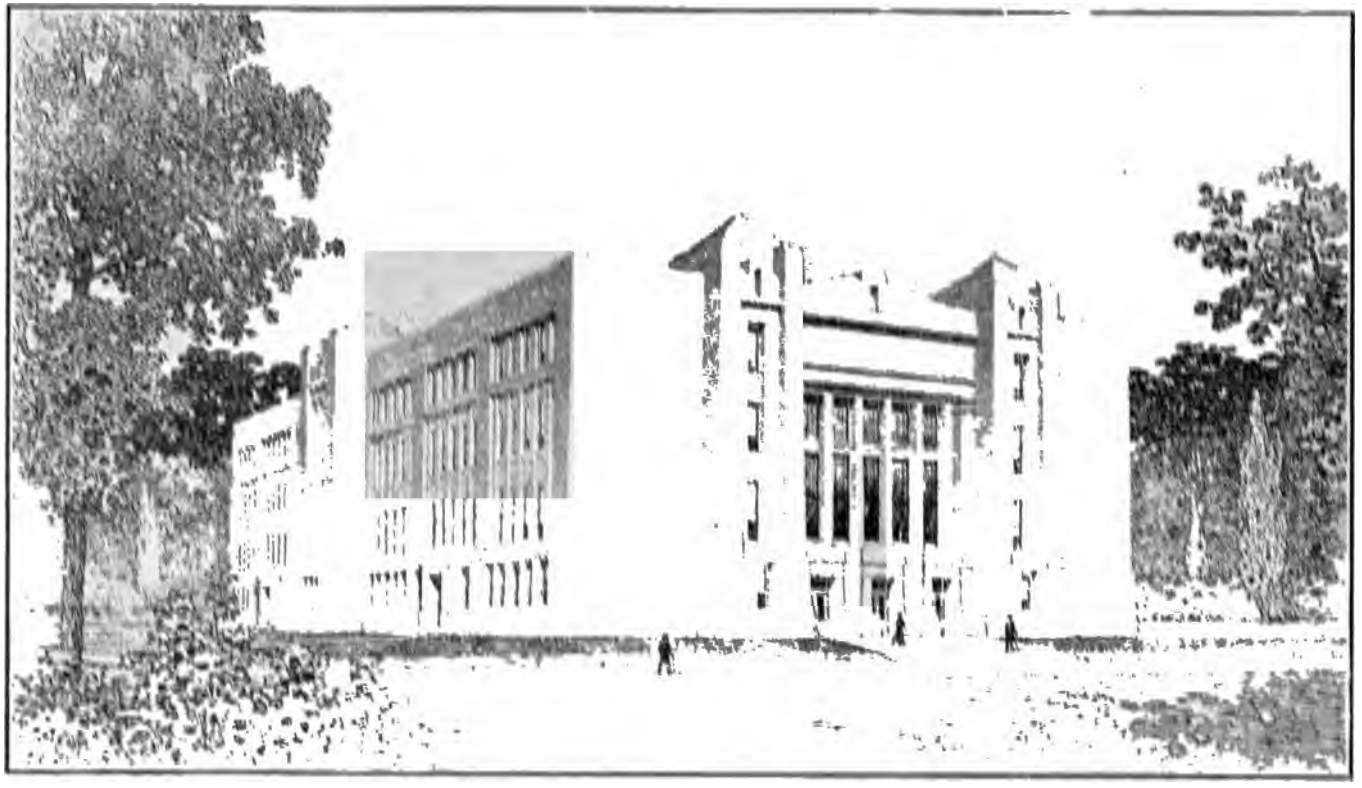


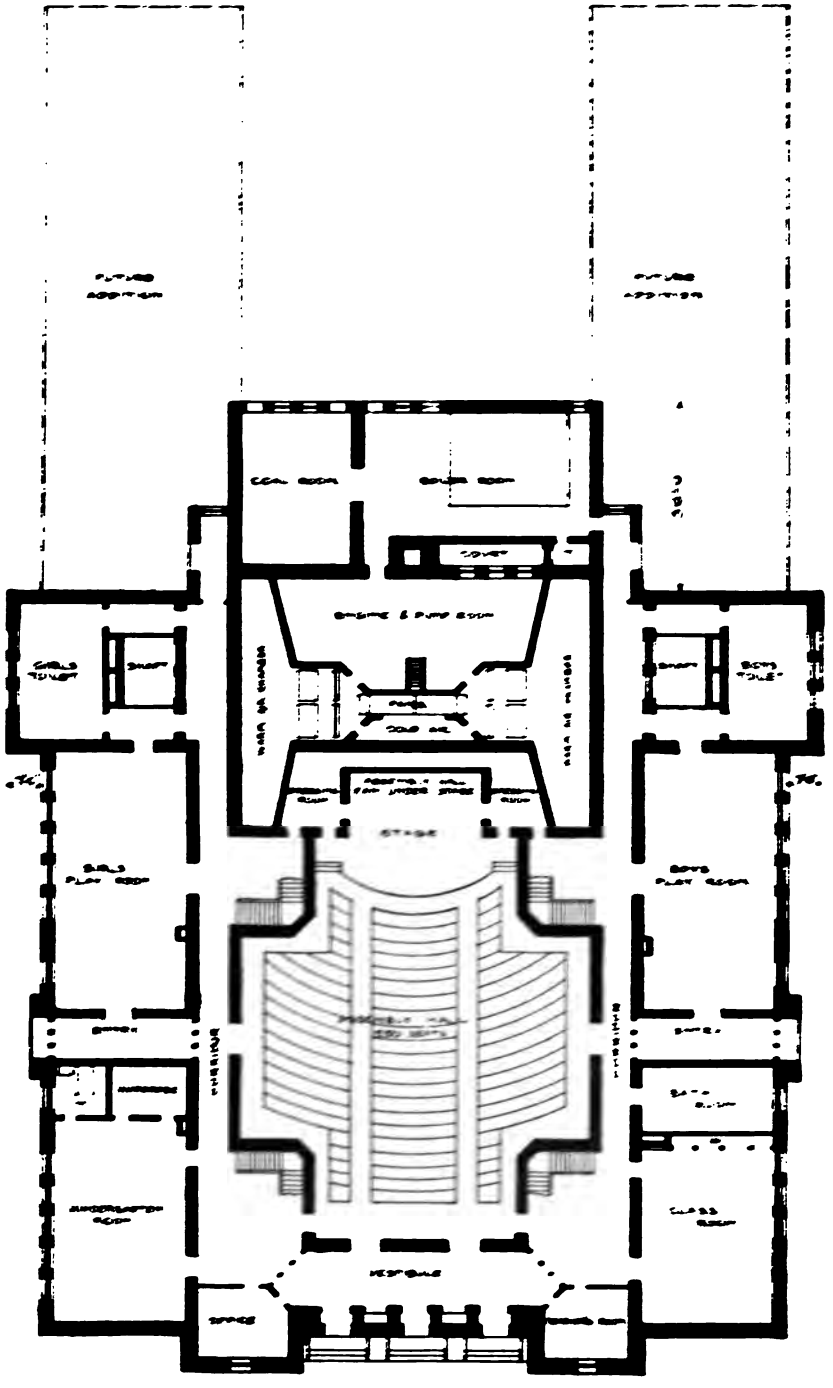
BERNHARD MOOS SCHOOL, CHICAGO, D. H. PERKINS, ARCHITECT.

(First floor plan.)



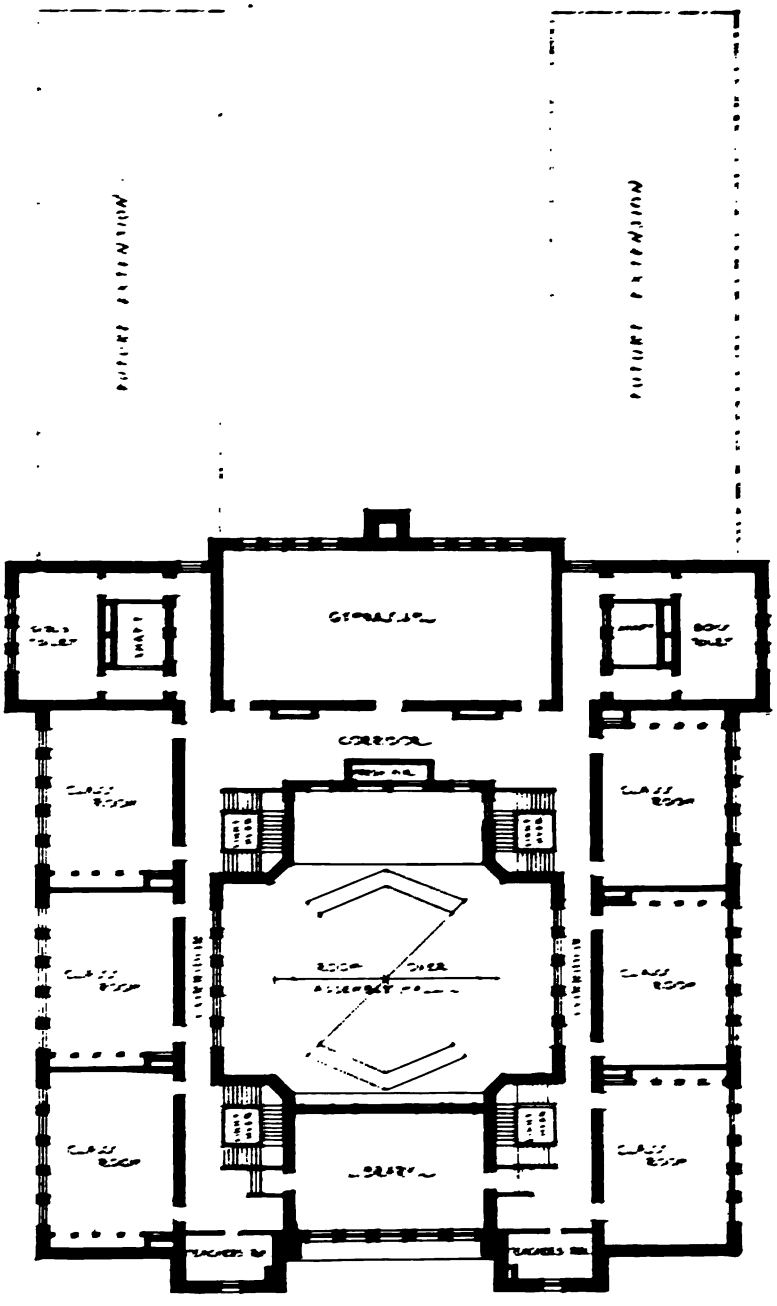
TILTON SCHOOL. CHICAGO. D. H. PERKINS. ARCHITECT.





FIRST FLOOR PLAN
1/8"-1'

FULTON SCHOOL CHICAGO D. H. PERKINS ARCHITECT.



THIRD FLOOR PLAN.

[illegible] SCHOOL CHICAGO D. H. PERKINS, ARCHITECT.

The plans for this construction have been approved by the board of education for the erection of the Tilton School at West End avenue and Forty-second street. The building is of 4 floors and a cellar, the cellar being under the assembly hall. The first floor contains a principal's office and teachers' room flanking the main entrance, an assembly hall with a capacity of 550 seats occupying the middle of the building, entered through a large foyer, the 2 front corners of the building being occupied on one side by a large class room and on the other side by a kindergarten, the assembly room being flanked by 6-foot corridors, there being 1 large play room, 25 by 49 feet, for each sex, the boiler room and heating and ventilating plant occupying the end central portion of the building behind the assembly room. Girls' and boys' toilets flanking this installation occupy the present corners of the building, each being separated from the corridors by an open-air court similar to the toilet rooms in the Bernhard Moos School. The building has, in addition to the main entrance, side entrances leading into the side corridors opposite 2 side doors of the assembly hall; there are also 2 other entrances at the present ends of these corridors. The second floor has 3 class rooms on each side of the building and has balconies provided for the assembly hall. It has also domestic science and manual training rooms over the space occupied below by the engines and fans; it has arrangements for toilet rooms as on the floor below and has 2 teachers' toilet rooms above the principal's and teachers' rooms on the floor below.

The third floor has 6 class rooms and a large gymnasium 30 feet by 65 feet, the same toilet arrangements as below and an open court over the roof of the assembly, a large library room being provided at the front of the building and 2 teachers' toilet rooms as on the floor below.

The fourth floor has 6 class rooms and instruction room over library room, and has teachers' toilet room and pupils' toilet rooms as on the floor below, there being no room on this floor over the gymnasium.

The building is provided with 4 flights of stairs at the inner angles of the U-shaped corridor, as shown on the plans. Each room is provided with a wardrobe, which is separated from the room by a sliding vertical shutter. The rooms are provided with unilateral light, and the corridors, except on the third and fourth floors, with secondary light through the class rooms on one side and the assembly hall on the other. The plans provide for extension by the addition to the building through the extension of the 2 wings, providing 6 additional rooms on each floor, the boiler room being designed to take an additional boiler for the service of the addition to the building over and above the two required for the service of the portion of the plant to be erected in the first instance.

The Commission acknowledges its indebtedness to Mr. D. H. Perkins, architect for the board of education of Chicago, for the details of these buildings.

BOSTON SCHOOL BUILDINGS.

The construction and repair of school buildings in Boston is vested in a board of schoolhouse commissioners, which board has charge of all school buildings and grounds, keeping the same in order and repair, the responsibility of selecting land for new school buildings, the district where one is needed being first designated by the school committee, and the duty of requesting the board of street commissioners to take the land selected, of appointing architects for new buildings, and of erecting and furnishing buildings ready for use. This commission is composed of 3 members, 1 of whom is by profession an architect, 1 by profession a contractor and builder, and 1 by profession a lawyer. Largely through the courtesy of Mr. R. Clipston Sturgis, the architect, and chairman of this board, the Commission has secured many valuable suggestions and much information on school buildings.

In Boston school buildings are divided into 3 classes—primary schools, grammar schools, and high schools—and the board is gradually formulating a policy for the treatment of these different classes of buildings. The primary schools are designed small and are numerous, so that any given district will be served without necessity of long walks for the smaller children, although large primary schools have been erected with a view to relieving crowded conditions existing over a large area, and always in such cases difficulty has been found to relieve the small, crowded schools, as the children are forced to walk a longer distance to their new school. For primary schools the normal sized room type is 24 by 30 feet, with a height of not less than 13 feet. The size of this room for grammar schools is increased to 26 by 32 feet. Unilateral light is aimed at, the glass of the window to be not less than one-fifth the area of the floor. Each room is provided with a wardrobe. Corridors are provided not less than 8 feet in width where the floor contains 4 rooms, or 10 feet in width for more than 4 rooms, the width governed by the length of the corridor and access to the stairs. Heating of the rooms is direct, as is also the ventilation, with ample duct capacity. The heating of the corridors is direct, but no ventilation is provided. Staircases are regulated by the building laws, but are made of fireproof construction in all cases. General toilet rooms are provided in the basement, in size approximating space for 3 water-closets for each schoolroom—2 for girls, 1 for boys, 36 inches urinal space for each schoolroom for the boys. Heating of these rooms is direct. The rooms are well ventilated artificially. Play rooms are provided in

the basement and play space in surrounding yards. Assembly halls are provided for all grammar schools, to accommodate the whole number of pupils in the smaller ones, and 800 or 900 in the larger ones. In some cases these rooms are 2 floors high and a gallery is used. The manual training room is provided generally in the grammar school, located in the basement, preferably the corner room, so that ample light may be obtained from at least two sides. A domestic science room is also provided, similar to the manual training room, with bilateral light. Kindergarten rooms are made slightly larger than class rooms, comprising a large room and a small room, supply closet, wardrobe, teachers' closet and water-closet with a bowl or sink. These rooms frequently have bilateral light. High school class rooms are laid out for classes of 36 or 42, with larger rooms to accommodate 60 to 80 pupils, the former rooms generally being the standard grammar class room size, 26 by 32 feet, and the latter 32½ by 43 feet. Lecture rooms are provided and generally inserted between the laboratories for physics and chemistry. Chemical laboratories are usually about 30 by 40 feet and are preferably corner rooms with bilateral light. The physical laboratory is similar in size. The biological laboratory is similar in size, and should be, preferably, a corner room with southeast exposure. Gymnasium and drill hall are generally located in the basement, directly under the assembly hall, with clear span of ceiling and combined height of basement and first floor. Visitors' gallery is generally provided, at the same grade and entering from the first floor, at least at one end. Handicraft rooms are used in the high schools, corresponding with the manual training work in grammar schools, and in addition thereto. A room about 30 by 40 feet is provided for domestic science, this space possibly being cut up into a kitchen and 2 smaller rooms for showing care of dining room and bedroom. A drawing room, the size of a large class room, preferably divided into 2 drawing rooms with workroom between, light preferably should be north.

High schools located at a distance from the homes of the pupils are invariably provided with a lunch counter, equipped so that simple food can be served hot. Arrangement is generally made with outside caterers to provide the food. Generally wardrobes in the high schools are provided by a common room, with lockers, on the lower floor. All new buildings are required to be fireproof, are figured for an allowance of from 30,000 to 35,000 cubic feet per class room, for the lower elementary schools, at 22 cents per cubic foot cost, and allowing a sliding schedule of cubic feet per class room for the higher elementary schools at 22 cents per cubic foot.

Buildings are ordinarily finished in common red brick and stone for the exteriors, with less ornamentation for the smaller buildings. The grounds outside of the buildings are arranged to give 25 to 40

square feet of play space per pupil, including such planted spaces and gardens as are desired. For high schools the allowance per cubic foot is raised to 24 cents and the number of cubic feet per class room is higher than in the elementary schools. These figures of cost are quite closely adhered to, but may be exceeded where foundations are soft, requiring piling or waterproofing, or any unusual expense for grading. The buildings are usually 2 stories and basement or 3 stories and basement. In some cases irregularly shaped lots are very satisfactorily treated—as for example, the Oliver Wendell Holmes, and the Dearborn public grammar schools. The usual case finds the treating of a site which has but one really desirable exposure, or a site which has 2 equally desirable exposures, or a site having 3 or 4 sides equally available for exposure. East and west are statedly most desirable—north poorest of all, excepting for corner rooms, which can be lighted from the other direction.

Various arrangements of rooms grouped on either side of a central corridor have been found satisfactory. The Jefferson School possibly is the simplest, with rooms on either side of the corridor, all facing one way, exits being at the end of the corridor.

The Oliver Hazard Perry Grammar School and the James Otis Primary School are similar to this, with the end rooms turned about. This grammar school has a second-story assembly hall, but the rooms at the end are turned about in order to get the best exposure.

The Ellis Mendell and the John Greenleaf Whittier are examples of the corridor type, where one side is distinctly preferable for light, and is a good type for use where the ends of the building are not free. The type illustrated by the Sarah J. Baker gives an 8-room floor plan where two 4-room plans are put together with a connecting corridor. This involves four stairways and gives an economical structure, but is very defective from the view-point of administration.

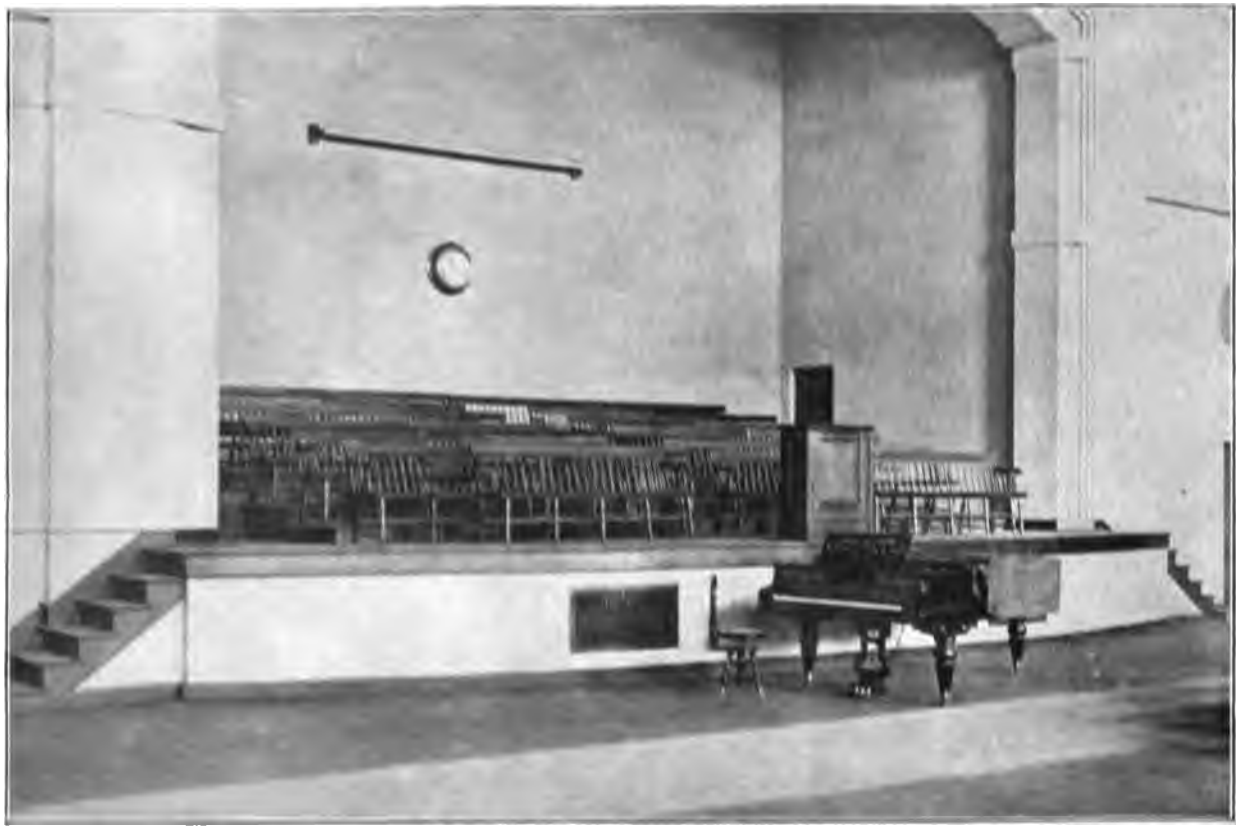
The Mather plan shows a corridor plan, with the addition of wings, somewhat similar to the New York H plan. In this plan the center of the building is sacrificed on the second and third floors to an assembly hall, while in the New York type the assembly hall is placed nearer to the ground, where it is of more use to the public and outside of the main space of the building.

The Thomas Gardner plan is a plan devised for future extension, to be placed in the center of a large lot, lighted from all sides, the plan showing only a portion of the building constructed, with its assembly hall occupying the space which will ultimately be the middle of the building, and being top-lit only.

Plans are shown of the following schools, which are briefly described:

MATHER GRAMMAR SCHOOL. BOSTON. CRAM, GOODHUE & FERGUSON, ARCHITECTS.

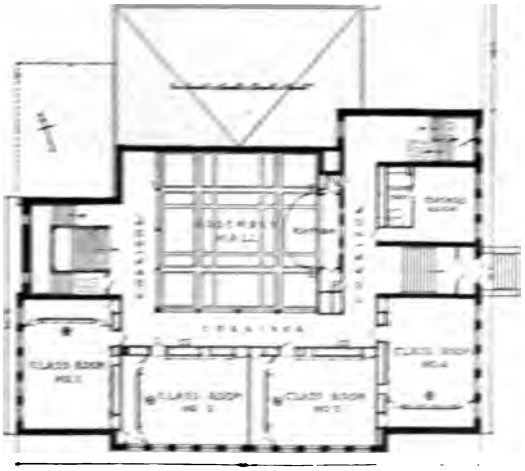
(Assembly hall.)

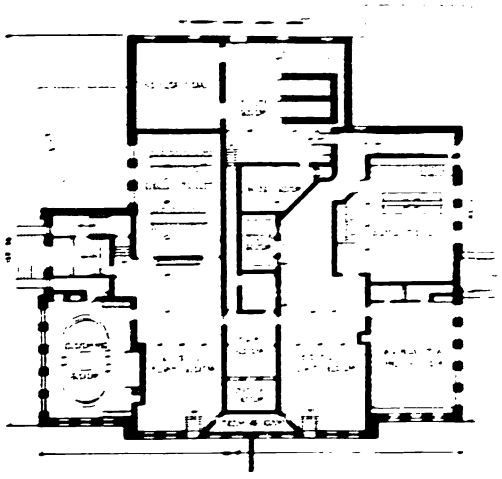


MATHER GRAMMAR SCHOOL — BOSTON — CRAM, GOODHUE & FERGUSON, ARCHITECTS.

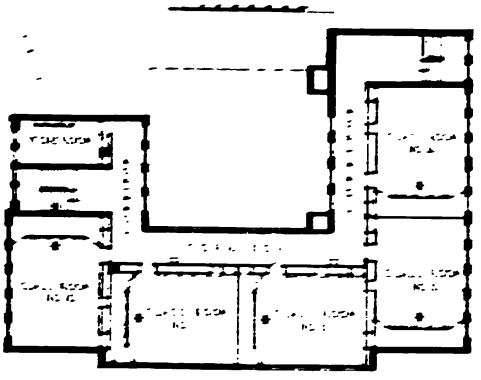
Gallery over public hall

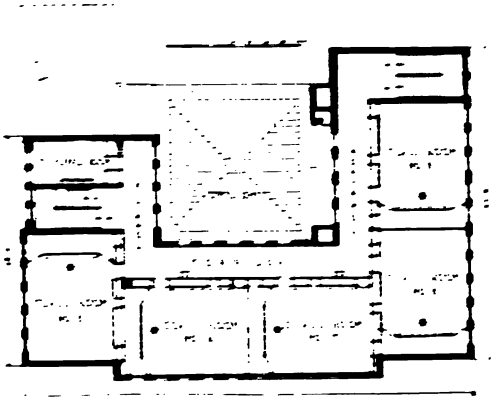
THOMAS GARDNER GRAMMAR SCHOOL — BOSTON. (Assembly hall.) — SHECKNEY & AUSTIN, ARCHITECTS.





THOMAS GARDNER GRAMMAR SCHOOL BOSTON STICKNEY & AUSTIN ARCHITECTS





THOMAS GARDNER GRAMMAR SCHOOL BOSTON STICKNEY & AUSTIN ARCHITECTS

MATHER SCHOOL.

Completed in 1905; cost, exclusive of site, about $290000. This is a grammar school with basement and 3 floors. First floor contains 4 class rooms facing on the central corridor and 4 class rooms in each wing facing on a corridor lighted from the court. The building has 2 entrances from the front and 2 from the rear, the entrances being on opposite sides of the main corridor and separating the groupings of rooms into 3 groups of 4 rooms each. Master's and teachers' rooms are provided in the space occupying the public entrance stairways, there being only 2 flights of stairs leading from the first floor upward. The second and third floors each contain 8 class rooms and a large assembly room, the assembly room lying astride the corridor and being used as a corridor when necessary. Two small anterooms are provided adjoining the stage, and the room is entirely lighted from the court at the backs of the children. A view of the assembly hall in the Mather School, showing the corridor passing through the center of the building, is given.

The Oliver Wendell Holmes and the Dearborn Grammar schools, both irregularly shaped buildings, also give examples of the corridor being obstructed by an assembly hall, which is utilized as a corridor when necessary.

THOMAS GARDNER GRAMMAR SCHOOL.

The Thomas Gardner Grammar School is also shown in perspective and plan. This building was also completed in 1905, so far as it is at present planned, at a cost of about $140000. The building has a basement and 3 floors, the basement containing the boiler and coal-storage room, boys' and girls' toilets, manual training room in one corner, cooking room in another, girls' and boys' play rooms adjoining their toilets. The first floor has an interior corridor thrown into an assembly hall, surrounded by some half dozen columns which partially obstruct the space. There are 4 class rooms on this floor, besides the teachers' room lying between the entrance and the staircase, the entrance and the staircase being connected by a corridor separated by a partition from the platform to the assembly room. The main entrance to the building at present occupies one corner, but when the building is ultimately completed to its full size, will occupy the center of this front. The second floor has an interior corridor lighted from the inner court, the walls being carried by the columns which are apparent in the assembly room on the floor below. It has 5 class rooms and a principal's room. The third floor has 5 class rooms and a store room. Four class rooms on each of the first, second, and third floors, will be added when the building is completed, expanding the size of the building readily from its present capacity

of a 14-room schoolhouse to one of 26 rooms, exclusive of assembly hall and the manual training and domestic science room.

A view of the assembly hall of this school and the obstruction that the columns form is given.

DEARBORN GRAMMAR SCHOOL.

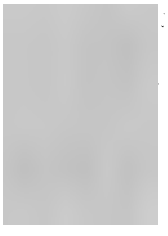
The Dearborn Grammar School is a building located on an irregularly shaped lot, and was completed in December, 1905, at a cost of a little more than $210,000, exclusive of the land. This building is a 3-story and basement structure, containing, in the basement, boiler and fan room, boys' and girls' toilets, boys' and girls' play rooms, and, in the corners, domestic science and manual training rooms. The building is of the through-corridor type, the corridor having 2 angles of about 140 degrees each. The corridors terminate in bay windows, with stairs at both ends. The building has 2 basement entrances, near the angle, at the back, one for boys and the other for girls. Its principal entrance, however, is a large, stately one at the apex in the front. The first floor contains 8 class rooms and some small teachers' and office rooms; the second floor 9 class rooms; and the third floor 4 class rooms and a large assembly hall, taking the place of the central corridor, and the 5 class rooms on the floor below, giving another example of an assembly hall having corridor running in front of the stage. Two small anterooms flank the center and rear of the stage. A view is shown of this assembly hall with the stage and the entrance to one corridor. This building is of the type where end light is less desirable and the end walls are void of windows, except in the basement and in the bay windows in the ends of the corridor, which are thus end lighted.

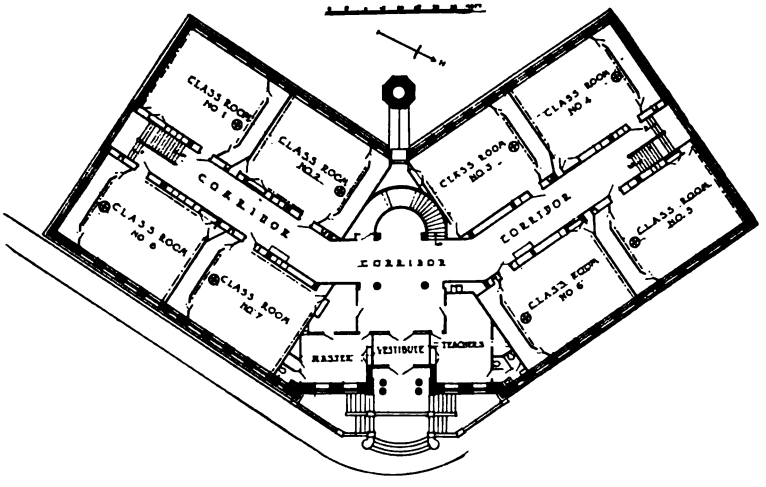
OLIVER WENDELL HOLMES GRAMMAR SCHOOL.

The Oliver Wendell Holmes Grammar School, of which the front and end views are shown and plans * of all floors, is another building on an irregularly shaped lot, and consists of a central portion with 2 wider wings. The floor plan illustrates the corridor type where the end light is desirable. In the central part of the building the basement is given up to heating and ventilating apparatus and coal storage. The 2 southern corners at each end are devoted to manual training and domestic science, boys' toilet adjacent to the former and girls' to the latter, with large play rooms between these respective installations and the stem of the building. The corridor on the first floor is in the front of the building, and, in the 2 wings, extends only through to the last class room, and is exceptionally well lighted by reason of the great length of its outside exposure in the stem of the

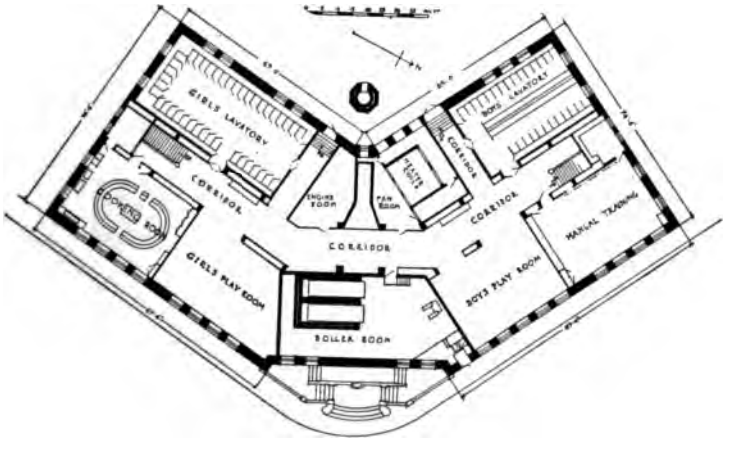
* Not printed.

DEARBORN GRAMMAR SCHOOL BOSTON EDWIN J. LEWIS, Jr., ARCHITECT.





(First floor.)



(Basement.)

DEARBORN GRAMMAR SCHOOL. **BOSTON.** **EDWIN J. LEWIS, JR., ARCHITECT.**

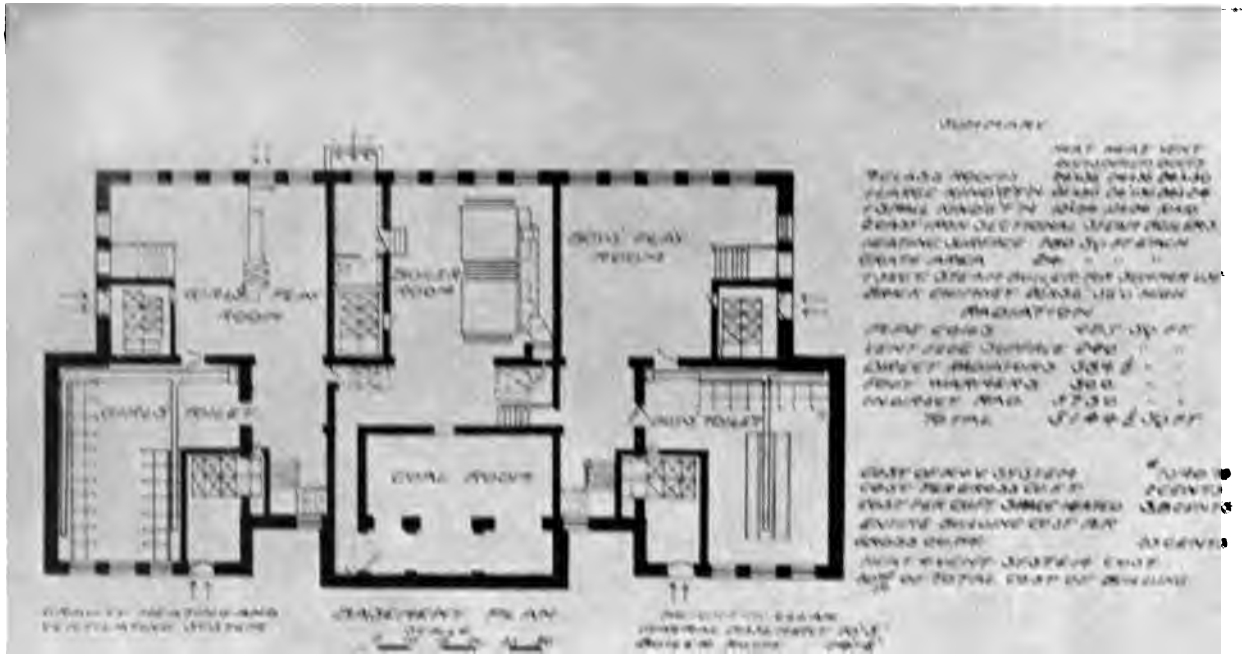
DEARBORN GRAMMAR SCHOOL, BOSTON, EDWIN J. LEWIS, Jr., ARCHITECT.
(Assembly hall.)

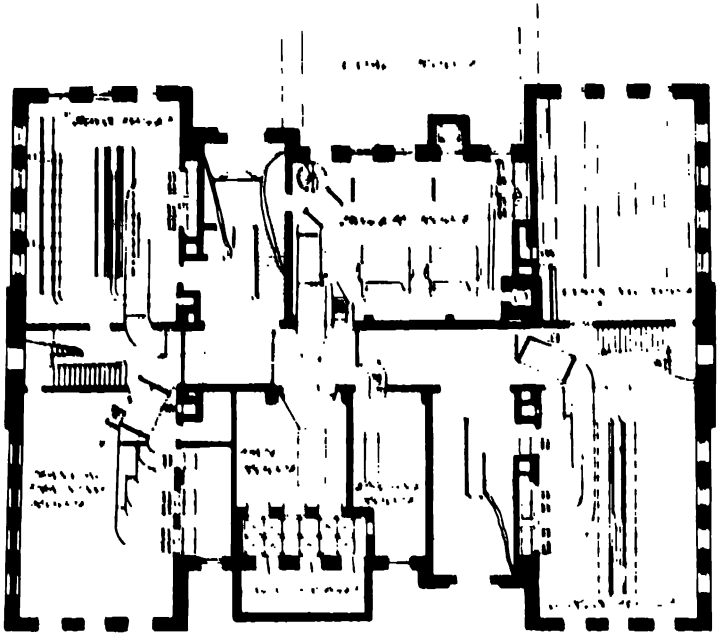
DEARBORN GRAMMAR SCHOOL. BOSTON. EDWIN J. LEWIS, Jr., ARCHITECT.

(Assembly hall.)

OLIVER WENDELL HOLMES SCHOOL. BOSTON. A. W. LONGFELLOW, ARCHITECT.
(Stage in hall.)

OLIVER WENDELL HOLMES RESIDENCE. BOSTON. (Stage in hall.) A. W. LONGFELLOW, ARCHITECT.





building. A small room, suitable for master's or teachers' room, is located on this floor between the corridor and the central class room, the latter being pushed about 10 feet to the rear to give this space, the same extra space being utilized in the second and third floors for the stage of the assembly hall. The teachers' room takes the place of one class room in the western wing, there being thus 4 class rooms in the eastern wing, 3 class rooms and teachers' room in the western wing, and 3 class rooms in the stem on the first floor. On the second floor are the master's room and 3 class rooms in the western wing, 4 class rooms in the eastern wing, and 2 anterooms and assembly hall in the stem, the assembly hall coming entirely to the front wall of the building, the part over the first floor corridor being used as a passageway when not in use for assembly purposes. Two large anterooms flank this hall on both sides. The assembly hall continues through the third floor, with a 5-foot gallery to serve as a balcony and corridor combined, there being also side balconies provided with several rows of benches. There are, as in the floor below, 7 class rooms and teachers' rooms on this floor. The building has 2 basement entrances, leading directly into the play rooms, and 2 main entrances to the first floor near the bends in the corridor, the stairs occupying the reentrant space directly opposite this entrance in wells extending entirely to the third floor. A view of the assembly hall in this school is given, showing the corridor passing through the rear of the assembly hall and the balcony corridor on the floor above. This building was completed in September, 1905, at a cost of about $195,000.

THE JOHN G. WHITTIER SCHOOL.

This school was completed in September, 1905, at a cost of about $75,000. It is a fine two-story and basement primary school of the corridor type, where one-side light is distinctly preferable and where it is not necessary or feasible to use the end of the building for light, the ends in this building being blank walls, excepting for one room used for kindergarten instruction. The building has 5 class rooms on the first floor and 5 and a small room on the second floor, besides having a small room attached to the kindergarten and 2 small rooms flanking the main entrance stairs on the first floor. The basement of this room contains boys' and girls' toilets and boys' and girls' play rooms, together with the necessary space for the heating and ventilating plant. The gravity system of heating and ventilation is used and a plan is given showing this installation.

THE OLIVER HAZARD PERRY SCHOOL.

This is a 14-room grammar school, typical of the smallest building for grammar courses built by the Boston Commission, and may well

be regarded as a model grammar school building. The basement has a high ceiling about 14 feet, which is connected to the general ventilating system of the building and contains manual training room and room for domestic science, in addition to the usual toilet rooms. Toilet rooms have separate exits and entrances and the building has 2 basement entrances, 1 at each end of the central corridor, and 1 at the same point in the main entrance of the building, on each side. Class rooms are of standard size and the lighting unilateral and beyond criticism, with large, wide windows extending to the ceiling. Cloak rooms are the usual small rooms, with entrance inside the main class room door. Each class room is provided with a built-in cabinet, consisting of cupboard above and drawers below. The building has 3 floors and in addition to the class rooms has an assembly hall seating 750 pupils, arranged with oak settees. The heating and ventilating is by the plenum system, and a plat is submitted giving the details and showing the lay-out in the basement. This building is undoubtedly in all respects one of the best school buildings in the United States. It is well worthy of careful study on the part of any architect engaged in work of this class. The work was completed at about a cost of $146,000, in 1905. (Plans not printed.)

THE JAMES OTIS PRIMARY SCHOOL.

A view * and plan of the James Otis Primary Schoolhouse is also shown. The building was completed in 1905, at a cost of about $108,000, being cited by the schoolhouse commissioners as an excellent example of the advisability of a single contract for the entire work to facilitate the completion of the building.

SAMUEL W. MASON PRIMARY SCHOOL.

The Samuel W. Mason Primary Schoolhouse is also shown, in view and plan.* This school was completed in August, 1905, at a complete cost of about $118,000, exclusive of site, the cost being slightly excessive by reason of the necessity of piling the foundation and doing a great deal of grading of the lot.

CHARLESTOWN HIGH SCHOOL.

This building, of which 2 views and several floor plans * are given, is one of the finest high schools in the country. On account of its close proximity to the Bunker Hill Monument and attendant buildings, it was decided to finish it in granite and with exceptionally fine architectural treatment. The result has been a beautiful small high school, with a capacity of about 540 pupils, at a total cost of slightly under $300,000. The building has 3 main floors besides a ground floor and a basement floor, the basement floor being occupied by the heating, power, and ventilation installation. The ground floor,

* Not printed.

JAMES ELLIS BOSTON BOSTON WINSLOW & BIGELOW, ARCHITECTS

SAMUEL W. MASON SCHOOL BOSTON. JOHN A. FOX, ARCHITECT.

CHARLESTOWN HIGH SCHOOL BOSTON PEABODY & STEARNS ARCHITECTS

2

which is partially below the ground on one face of the building and well above the ground on the opposite face, the building being built on a fairly steep hillside site, contains a large gymnasium, extending also through the first floor, the boys' toilet room and wardrobe in one corner, the girls' wardrobe and toilet room in the opposite corner, the latter being flanked by a group of rooms for domestic science, comprising main cooking room, typical bedroom, typical dining room, and typical pantry, the other corner being occupied by the rooms for use in connection with the gymnasium—locker and dressing rooms and a number of showers. A large lunch room is provided on this floor between the girls' baths, wardrobe, and entrance lobby. Exit and entrance, with steps up and down, are at the ends of the corridor, running through the building slightly off the center line.

The first floor has in front of the central corridor 3 large class rooms with unilateral light and small recitation rooms, principal's office, and a room for women teachers. Behind the corridor, on one face of the building, is a small recitation room and a large handicraft room and on the other face a recitation room and a large class room, the 2 corner rooms being given bilateral light. As remarked before, the gymnasium extends through this floor. Notable features are the toilet rooms provided in the mezzanine floors with access from the landing of the stairs half way between 2 floors. The third floor front is occupied by chemical and physiological laboratories, each having a small workroom attached and a lecture room between. These are all large rooms—the 2 corner ones having bilateral light. The corridor of this floor is much wider than on the floor below, excepting for a recess containing the stage of the assembly hall. One corner is occupied by the botanical and zoological laboratories, with bilateral light, with a girls' toilet between it and the hall and corridor. The other corner is a large drawing room with bilateral light and a recitation room with unilateral light and small corridor leading thereto. The assembly hall occupies the space on this and the third floor.

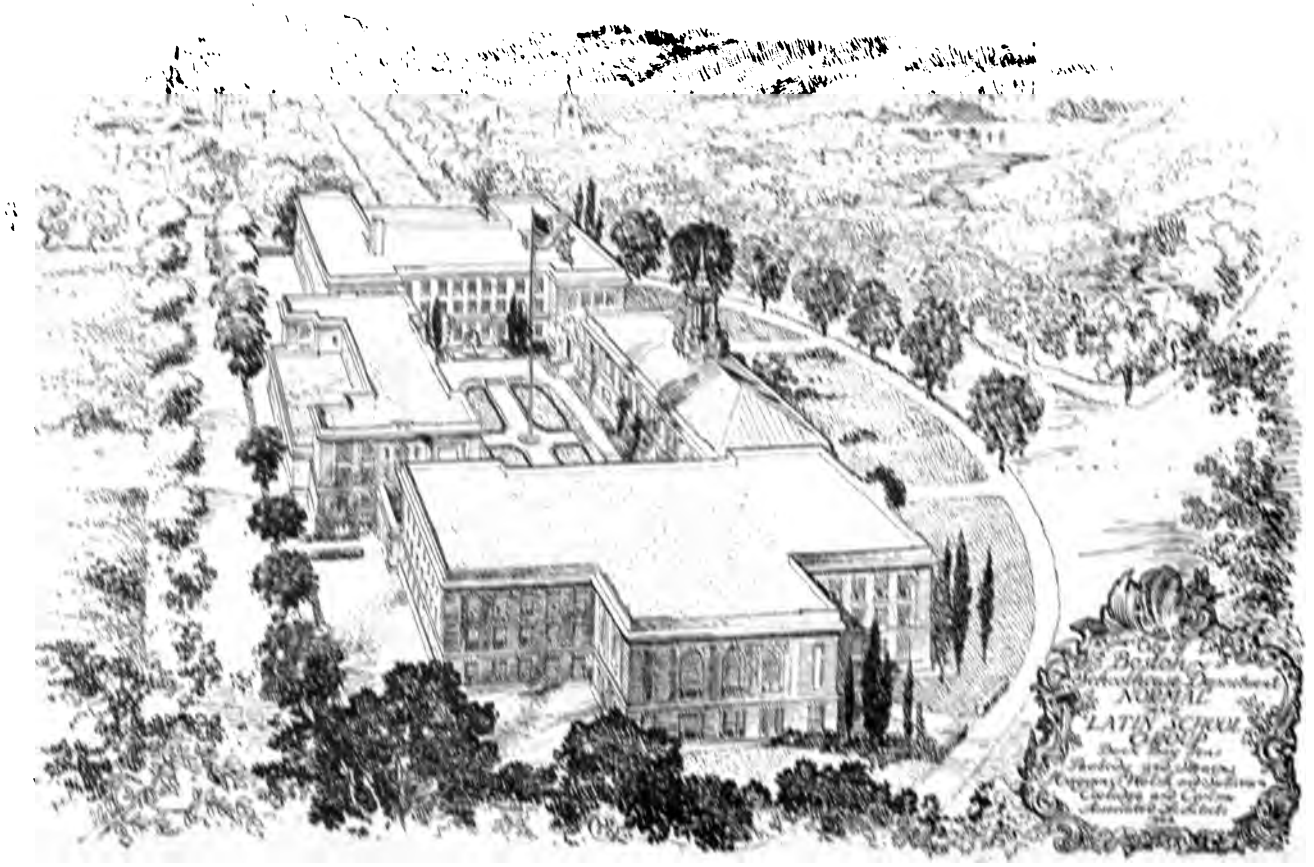
The second floor contains along the front of the building 2 class rooms with unilateral light in each corner, library, class room, recitation room, with unilateral light between and 2 exceptionally large class rooms in the other two corners, a girls' toilet lying between one and the corridor and a room for men teachers between the other and the corridor. The corridor on this floor is wider than on the floor below, except for the projection into the corridor of inclosed space for the stage of the assembly hall. Temporary platform is also provided, so that on occasion the stage space may be enlarged so as to cover the entire width of the corridor.

The heating system is a combination pressure with pump and receiver, or may be run gravity return. When the school is in session the water of condensation returns to the boiler by means of the

pump, but at night when the fires are banked and the steam system has dropped, the water will return directly to the boilers by opening the by-pass valves. There are 2 horizontal return tubular boilers of 90 horsepower each. There are indirect radiators placed in the primary heating chamber and at the base of the fresh-air ducts, besides direct radiators located in the small rooms and corridors. Air is furnished by a 10-foot cone fan, driven by a 12-inch by 8-inch belted engine with 25 pounds of steam, delivering, when the building is in use, 50,000 cubic feet of air per minute, the ventilation being stimulated by means of aspirating coils heated by exhaust steam from the engine and pump. The main ducts are of masonry construction in the basement. Automatic temperature control is installed in all class rooms, assembly hall, and gymnasium. The equipment, furniture, and finish of the building are worthy of exceptional note and entirely in keeping with its beautiful exterior.

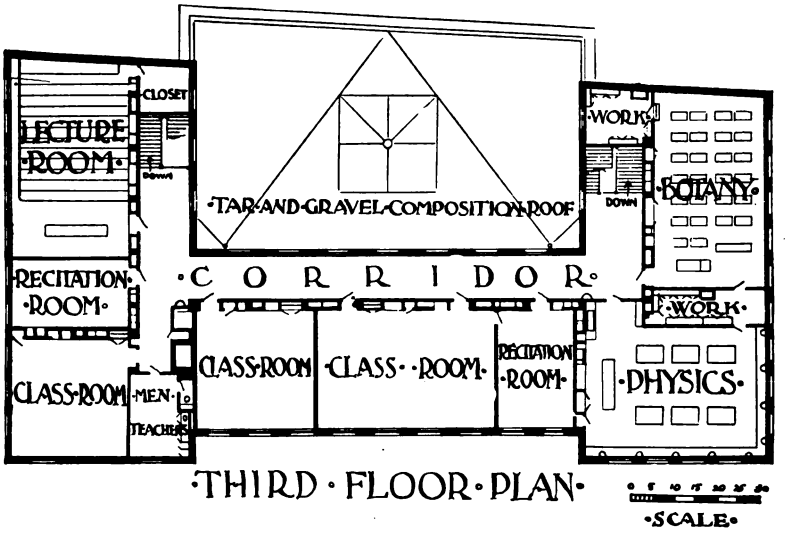
NORMAL AND GIRLS' LATIN GROUP.

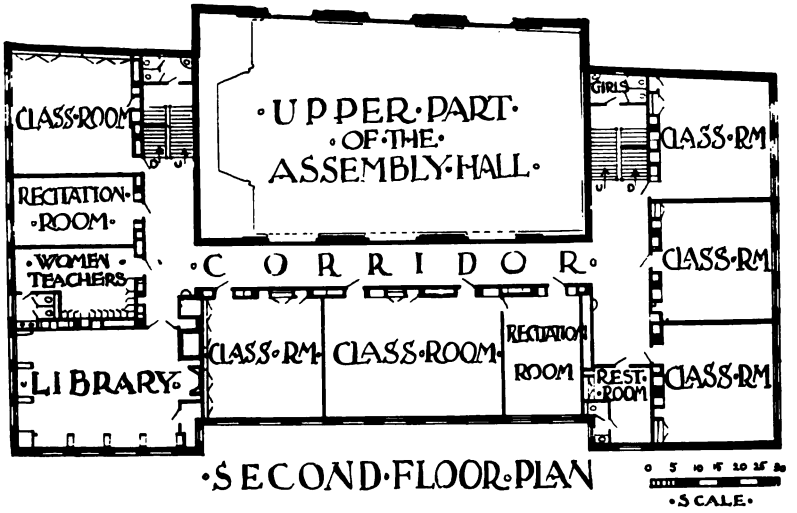
The city is also engaged in the construction of a group of buildings known as the Normal and Girls' Latin Group, to be situated on a lot at the Tremont entrance to the Fenway, the plot being almost surrounded by Worthington street, Board of Survey street, No. 219, and Huntington avenue. This group, when completed, will comprise the Normal School, which contains all class rooms, recitation rooms, and laboratories for normal work for 350 pupils—men and women; the Model School, in which are 17 class rooms for all grades from kindergarten up to and including the ninth, 2 rooms for each grade except the eighth and ninth; the Latin School which contains all the class rooms, recitation rooms, and laboratories for 600 pupils, and the Common building, which contains the gymnasium for the Normal and that for the Girls' Latin, dressing rooms, baths and lockers connected therewith, and the wardrobes and lunch rooms. The buildings are grouped around a central courtyard and face, a little to the south of east, on a planted lot of land belonging to the park department of the city of Boston, across which thoroughfare has been given for footways to the schools. The Latin and Normal schools occupy, respectively, the north and south ends of the lot. The Common building comes between on the east, and this will be kept low so as not to shadow the court, and the Model School occupies the space between the buildings on the west. This leaves, flanking the Model School, 2 playgrounds on Worthington street, for the girls and boys in the Model School; and the central courtyard is arranged partly for ornamental and partly for experimental gardening. The buildings are designed as an harmonious group, executed in brick and limestone, with the cornices of terra cotta. Plans for the Latin School and the Normal School of this group and a plan of the entire group are reproduced. The total cost is estimated as between $720,000 and


NORMAL
LATIN SCHOOL

SAMUEL W. MASON SCHOOL BOSTON JOHN A. FOX, ARCHITECT.

CHARLESTOWN HIGH SCHOOL BOSTON STEARNS & AUSTIN ARCHITECTS





LATIN SCHOOL, BOSTON.

$740,000, exclusive of the site, but including all the trades and the buildings completely equipped with all fittings excepting the furniture. The Girls' Latin School will contain, in its basement, the boilers for the whole group and the engines and fan for this building. It will have on the first floor 5 small class rooms, 1 large class room, 2 recitation rooms, assembly hall, and rooms for principal and women teachers. On the second floor, 5 small class rooms, 1 large class room, library, 2 recitation rooms, 2 rooms for women teachers, and the upper part of assembly hall. On the third floor, 1 large class room, 2 small rooms, 2 recitation rooms, lecture room, and physics and botany laboratories.

The Normal School contains, in the basement, the engine, fan, primary coils, and engineer's room; on the first floor, handicraft rooms, rooms for manual training, both woodwork and cardboard, and a teacher's workroom, a lecture room, 2 drawings rooms, with workroom between, music room, large and small room for psychology, with workroom between, and a suite of rooms for the teachers, including the principal's room, a reception room, rooms for the men and women teachers, and a teacher's lunch room. On the second floor, the library, a room for history, 2 rooms for English with a workroom between, a large and small room for geography, with a workroom between, 2 rooms for mathematics, with a workroom between, and 2 rooms for instruction in kindergarten work, and also a large study hall capable of seating 350 pupils, a hospital room, and toilets; on the third floor, 2 laboratories for physiology, with a workroom between, rooms for household science, containing kitchen and pantry, and a dining room and bedroom, chemical laboratory and workroom, and laboratories for physics, zoology, and biology, with workrooms between the two last.

The Common building contains in the basement the heating ducts; on the first floor, which is on a level with the first floor of the adjoining Normal and Girls' Latin schools, the main vestibules at either end, the wardrobes, toilets, and lunch rooms, on the Normal side for men and women, on the Girls' Latin side for girls only, and in the central sections, slightly below this floor and on the mezzanine immediately above it, dressing rooms, bathrooms, and lockers; for the pupils in the two schools, two independent plants. In the case of the Normal School, the classes consist of 30 pupils, and as their gymnastic training is of a serious nature, for which they will regularly dress, provision is made so that the whole class can bathe after their work; the 30 showers are arranged in three ranks, with separate control for each rank and separate mixers; 3 temperatures can therefore be provided, but the class as a whole will be bathed at the same time, taking probably not more than two or three minutes. On the Girls' Latin side the classes are 50 in number, and it is not expected that the classes as a

whole will bathe after their ordinary calisthenics; 12 showers are provided for use of those who are taking additional exercise, or who are working in connection with athletic teams, and these are supplied and controlled separately. On the second floor are the gymnasiums for the 2 buildings, each gymnasium being approximately 55 by 70 feet. Rooms for the directors of physical training are provided on the floor and small galleries for spectators at the end of each gymnasium.

The Commission believes, also, that the layout of desks for the Boston schoolhouses is worthy of note, and have reproduced it here by courtesy of Mr. Sturgis.

The layout for grades 1 and 2 in the primary room differs from the layout for the third grade, although the same number of pupils may be accommodated, namely 56. The layout in this size room for the fourth grade accommodates 50 desks, or more often 48. The layout in the grammar room for the fourth, fifth, and sixth grades accommodates 56 desks, although in each grade the desks are differently placed. The layout for the seventh grade also accommodates 56 desks still differently spaced, and the eighth and ninth grades in this sized room give a much greater space for the teacher's desk. The high school layout in the grammar school room allows for but 42 desks, but in the larger room allows for 80.

The Commission also reproduces, from data furnished by Mr. Sturgis, figures of cost of the buildings described in this report:

Figures of cost of Boston schools described herein.

Name of building.	Total cost.	Cost of building only.	Cubic contents.	Cost per cubic foot.	
				Total.	Building only.
				Cents.	*Cents.*
Mather	$289,333	$241,098	1,353,831	21	17
Thomas Gardner	140,268	113,769	735,573	19	15
Dearborn	216,995	182,104	980,100	22	18
O. W. Holmes	195,648	159,564	991,609	20	16
J. G. Whittier	74,736	61,053	325,051	23	19
O. H. Perry	146,146	118,497	612,351	24	19
James Otis	107,818	90,867	411,645	26	22
S. W. Mason	118,325	99,528	438,223	27	23
Charlestown High	293,647	251,256	1,170,000	25	21
Normal Building	320,147	272,125	1,416,947	23	19
Girls' Latin	266,722	232,213	1,200,808	23	19

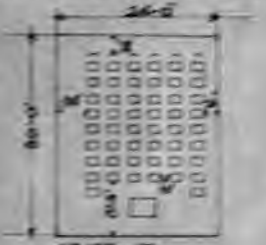
Name of building.	Number class rooms.	Sittings.	Cost per room.	Cost per pupil.	Cost of lot.
Mather	32	1,600	$9,042	$180.83	----------
Thomas Gardner	14	700	10,019	200.38	----------
Dearborn	21	1,050	10,333	206.66	----------
O. W. Holmes	24	1,200	8,157	163.04	----------
J. G. Whittier	10	500	7,974	149.47	$9,029.50
O. H. Perry	14	700	10,439	208.78	----------
James Otis	12	600	8,985	179.70	31,172.75
S. W. Mason	14	700	8,452	169.03	17,636.31
Charlestown High	----------	540	----------	545.60	57,734.98
Normal Building	----------	350	----------	914.70	139,771.50
Girls' Latin	----------	600	----------	494.54	----------

CITY OF BOSTON

SCHOOLHOUSE DEPARTMENT

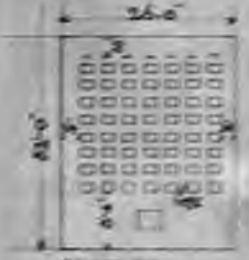
STANDARD LAYOUT OF PUPILS DESKS

GRADE I AND II
36 DESKS 12" X 18"
2 AISLES
GRADE II 35 DESKS

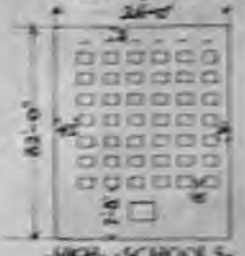


GRADE III
30 DESKS 15" X 21"
2 AISLES

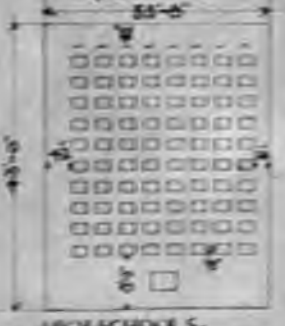
GRADE IV 36 DESKS
GRADE V 36 DESKS
GRADE VI 36 DESKS



GRADE VII
36 DESKS 16" X 25" LID
2'-7" BACK TO BACK
GRADES VII AND IX
2 AISLES



HIGH SCHOOLS
42 DESKS 20" X 26"
LID
2 AISLES



HIGH SCHOOLS
80 DESKS 27" X 28" LID
2 AISLES

CHARLESTOWN HIGH SCHOOL, BOSTON.

(Class room bookcases.)

Total cost figures given cover cost of building, heating, plumbing, and electrical contracts, but do not include cost of site. The cost of building ordinarily is between 79 and 85 per cent of the total cost exclusive of site, and is given in second column. The heating contract is generally 8 or 9 per cent, but varies between 7 and 12: the plumbing contract is generally about 4 or 5 per cent, but may be as low as 3 or as high as 8 per cent: the electrical contract is generally about 3 or 4 per cent.

REMARKS.

The satisfactory condition of the newer Boston schools is largely due to the careful attention to detail shown in the office of Mr. R. Clipston Sturgis, chairman of the board of schoolhouse commissioners.

As a rule the interiors of the buildings are notably plain and characterized by exceptionally good materials and excellent workmanship. All minor details from basement to roof show this care, the buildings giving an impression of excellent quality. The newer buildings are finished in corridors and rooms with painted burlap. The floors of the rooms are of good hard wood and the corridors granitoid, asphalt, or similar construction. The question of artificial lighting of class rooms has been well studied. Electricity is used, each fixture giving 48 candlepower, there being generally 4 to a class room, suspended in the ordinary manner, with the 4 bulbs inclosed in what might be described as a hemisphere of white translucent glass, convex surface down, the light being diffused and the white ceiling reflecting their maximum.

The fittings of the coat room are also worthy of note. Supported by brass brackets, screwed to wooden strips along the walls, are 2 round wooden rails, about 2¼ inches in diameter. The upper rail is about 10 inches from the wall and the lower not more than half as far and about 6 inches below the other. On top of the rails is a brass, round-topped hat hook: standing vertically and directly underneath it is a double coat hook. Fork-shaped clips are in line with this, screwed to the wooden strip, devised for holding umbrellas. Three steam pipes covered with wire mesh pass along the wall near the floor, heat from which dries the clothing when it is hung up wet. A continuous zinc-lined drip pan in which the umbrellas stand is held in position by the clips mentioned.

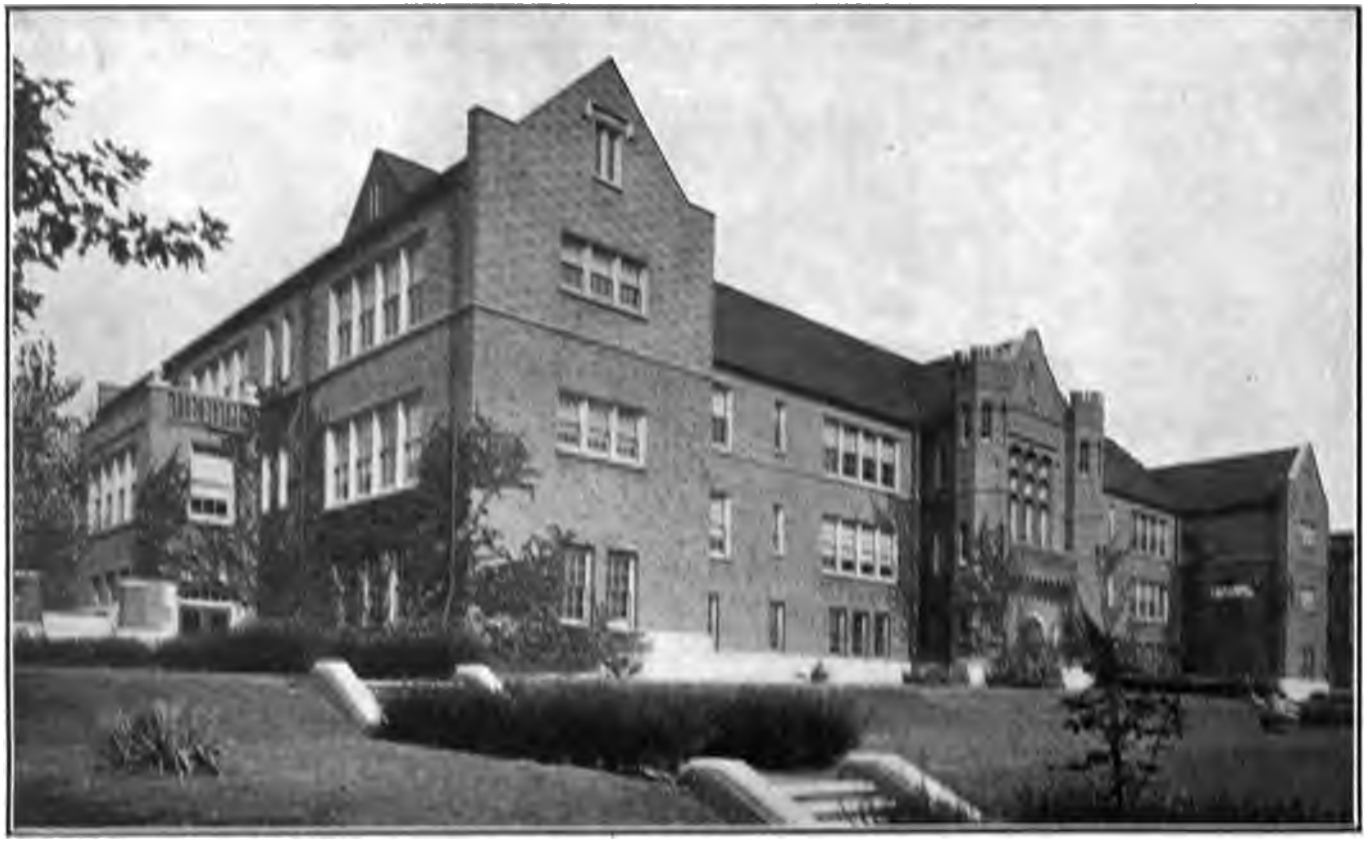
Stairways are ordinarily of iron, with the tread from 10 to 12 inches: riser 6½ to 7 inches. Some stairs are of reenforced concrete. A view is shown of a bookcase in the interior of one of the Boston class rooms.

The Commission is indebted to Mr. Sturgis for many details given of these schools.

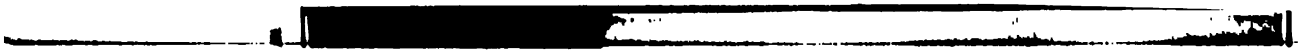
ST. LOUIS SCHOOLS.

The newer public school buildings of St. Louis are probably the best in the United States. They are almost all of fireproof construction and but 2 stories in height, exclusive of the basement floor, which generally is built entirely above ground on 3 sides of the building, the basement floor being partially or entirely buried by a terrace on the entire front in most of the buildings, this terrace being used for handsome gardening effects to give the buildings beautiful architectural setting. The buildings are built to accommodate all grades from the kindergarten to the eighth grade, inclusive, from which they pass to the high school. They are, as a rule, of what might be called the 20-class room type, exclusive of a large kindergarten room and 2 rooms for manual training and domestic science, respectively. The buildings show departures from the conventional corridor type, the corridors having outside light through generally about half of their length. The wardrobes also have outside light, but are entered only from the class rooms. There is usually an E-shaped corridor, the entrance hall taking the place of the central stem of the E, the large kindergarten room being the only room on the opposite side of the corridor and being in size equal to 2 class rooms. There are usually 2 class rooms in front of the corridor on each side of the entrance and between the other corridors and 3 rooms on each end on each floor. The principal's office is above the entrance corridor and 2 class rooms are above the kindergarten room. This is the normal type, although, in some cases, the kindergarten is thrown in front of the main corridor and no rooms at all appear behind it. This is the case at the Patrick Henry School.

The schools almost invariably occupy ample sites, giving much outdoor playground space for use of the children and allowing the height of the building to be limited to 2 stories and a basement, and, as a rule, permitting of a treatment of the front in terraces and gardens which gives the building a splendid architectural setting, showing the building in front as a 2-story building set well up on a terrace, while from the sides and rear the building appears as 3 stories, basement entrances being in most buildings directly on a level with the ground. Constructions are fireproof excepting the pitched roofs, which are of mill constructions covered with sheathing and tile. The outer and interior main walls are of hard brick laid in Portland cement mortar, the minor partitions being of hollow tile and the buildings plastered with cement plaster. Floors are of reenforced concrete and finished with narrow maple flooring in the class rooms. In the corridors a similar flooring is sometimes used, or sometimes asphalt. Basement floors are of granitoid or cement. Steps have risers and skirtings of marble, with the treads



WYMAN SCHOOL — ST. LOUIS — WM. B. ITTNER, ARCHITECT



WYMAN SCHOOL AND TEACHERS' COLLEGE. ST. LOUIS. WM. B. ITTNER, ARCHITECT.

(Pergola joining the two schools.)

FARRAGUT SCHOOL. ST. LOUIS. WM. B. ITTNER, ARCHITECT.

(Entrance.)

HEMPSTEAD SCHOOL ST. LOUIS EXTERIOR

W. B. ITTNER ARCHITECT

HEMPSTEAD SCHOOL, ST. LOUIS, WM. B. ITTNER, ARCHITECT.
(End pavilion.)

HEMPSTEAD SCHOOL. ST. LOUIS. WM. B. ITTNER, ARCHITECT.

(Concrete stairway.)

YEATMAN HIGH SCHOOL. ST. LOUIS. WM. B. ITTNER, ARCHITECT.

[illegible] SCHOOL AT [illegible] WM. B. ITTNER, ARCHITECT.

SHEPARD SCHOOL ST. LOUIS WM. B. [illegible] ARCHITECT.

Entrance.

COTE BRILLIANTE SCHOOL, ST. LOUIS. WM. B. ITTNER, ARCHITECT.

FRANCIS SCHOOL, ST. LOUIS, WM. B. FISHER, ARCHITECT.

built in with 1 inch of asphalt. Class rooms are 24 feet by 32 feet 6 inches, with a clear story height of 12 feet 6 inches. They are arranged for left-hand lighting only, a glass surface of 20 per cent of the floor area being provided. Class rooms accommodate from 48 to 54 pupils, depending on the grades, and are equipped with single seats. Blackboards are of natural slate placed on the 3 inner sides of the room, are 3½ feet high, and are set from 2 feet in the lower grades to 2 feet 5 inches in the upper grades, above the floor. Each class room is provided with a wardrobe 16 feet by 5 feet 3 inches. Each wardrobe is provided with shelves and 60 hooks, portable umbrella rack, and, as a rule, is entered by 1 door only, but has a window opening to the air. The exits for the air are placed in these rooms, which insures their ventilation and assists in drying out wet clothing.

Each room is provided with a bookcase containing 65 running feet of shelving, a bracketed shelf over the blackboard at the front of the room, and picture molding. The class rooms are painted in plain colors, with a simple stencil frieze, the friezes in the kindergarten room being especially designed to typify childhood life. The corridors have a width of 14 feet, are amply lighted from the outside, and give direct access to all class rooms and the stairways. Stairways are usually placed at the ends of the main corridor and central to the group of rooms on either side of the axis of the building. They are never more nor less than 5 feet wide, with ample landings and have solid concrete balustrades.

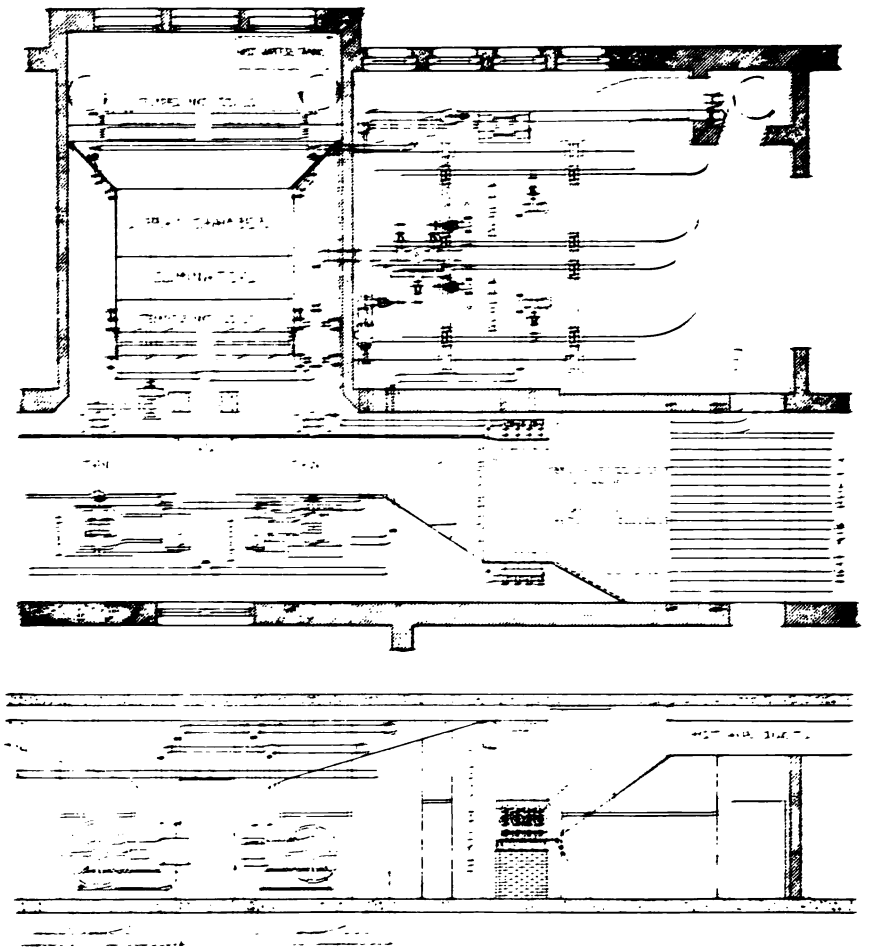
The exterior appearance of the buildings could hardly be improved. Extravagant material and ornamentation is avoided. The buildings announce themselves as handsome, modern school buildings. Very little stone is used in trimming. No attempt is made to accent the architectural treatment, except in the main entrance, which is generally dignified by a fitting treatment. The buildings provide in the basement boys' toilet and girls' toilet in the corners, girls' play room and boys' play room being large corner rooms occupying the other corners and in some cases one or possibly both of these rooms fitted up at one end with a small stage for use as an assembly hall. This, however, is not usual. In addition to these play rooms nearly every building shows 2 other play rooms which, in the recent buildings, are fitted up as boys' and girls' gymnasiums. These rooms are in the main part of the building and have front and rear light by direct light from an area which lies between the face of the building and the terrace, which is usually found in front of this entire space. Fresh-air inlet is between these 2 rooms, the fan and engine room generally occupying the exact center of the building, boiler rooms being the center of the rear face. The buildings are entered on the basement floor generally from 2 doors from the rear playgrounds, 1 on

each flank, just inside the toilet rooms. There are also front entrances by either a single main entrance directly in the center of the building, or in 2 subsidiary main entrances flanking the kindergarten, which may be thrown to the front of the building, as in the Patrick Henry School. Usually 2 entrances are provided on the main floor at the ends of the corridor just inside the side door of class rooms.

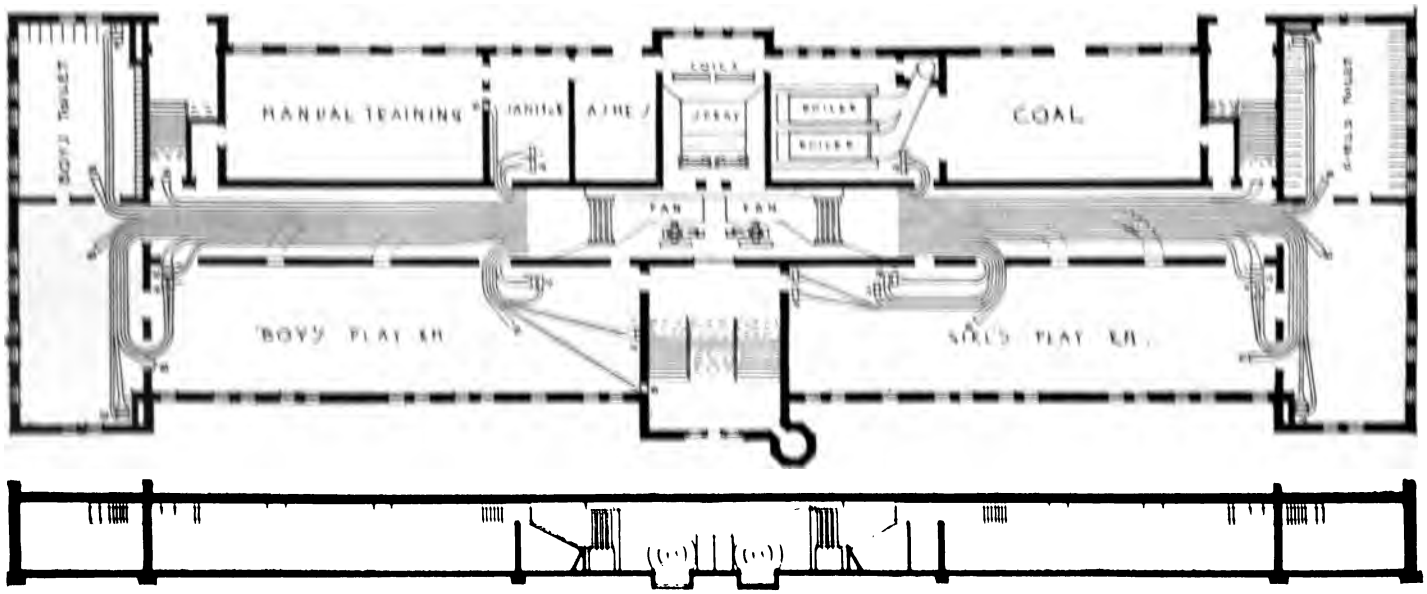
Two rooms adjoin the boys' and girls' gymnasium, flanking the fan and engine room, which in some cases are used as storerooms and in the congested and poorer sections of the city are fitted up with shower baths, and pupils are required to use them. Sometimes a manual training room is provided in the basement between the boys' toilet and the boiler room, the corresponding space on the opposite side being used as subsidiary rooms to the boiler service. The main floor of the building has a wide entrance hall, which is flanked by 2 class rooms on the main corridor front of the building, the kindergarten room with its adjacent rooms being directly across the corridor from the main entrance. Windows are provided between the kindergarten room and the main corridor, generally of decorative or stained glass. These windows assist in the lighting of this, the only part of the corridor which is not brilliantly illuminated.

Usually 3 class rooms are provided at each end of the building, leaving space for 2 small rooms between the corridor and inside the corner class room. One of these is always used for teachers' toilet and the others can be used for recitation rooms or any similar purpose. The second floor has practically the same plan, the space over the entrance hall being utilized for principal's office in 2 rooms, a lobby and a large front room. The space over the kindergarten is occupied sometimes by 2 class rooms and sometimes by a large room used for domestic science or for a school library. Aside from this the floor plan is the same as that of the floor below. Plumbing is usually of the most approved sanitary type, individual seat action closets provided in the general toilets and in the emergency toilets on each floor. Urinals are of glass and automatically flushed. Special provision has been made for ventilating these toilet rooms, those on the main floor having provision made for their ventilation by containing the exits for the system of forced ventilation of the corridors. Drinking fixtures over deep sinks, with porcelain cups, are installed in the corridors, in the basement, play rooms, and at least 1 on the wall of the building, outside, in each playground. The buildings are designed for low-pressure system of plenum steam heating and ventilation. Plans of the general basement layout of the heating and ventilating apparatus in one of the schools are shown herewith.

Illustrations herein give the general basement layout of the heating and ventilating apparatus for the New Baden School, now in course



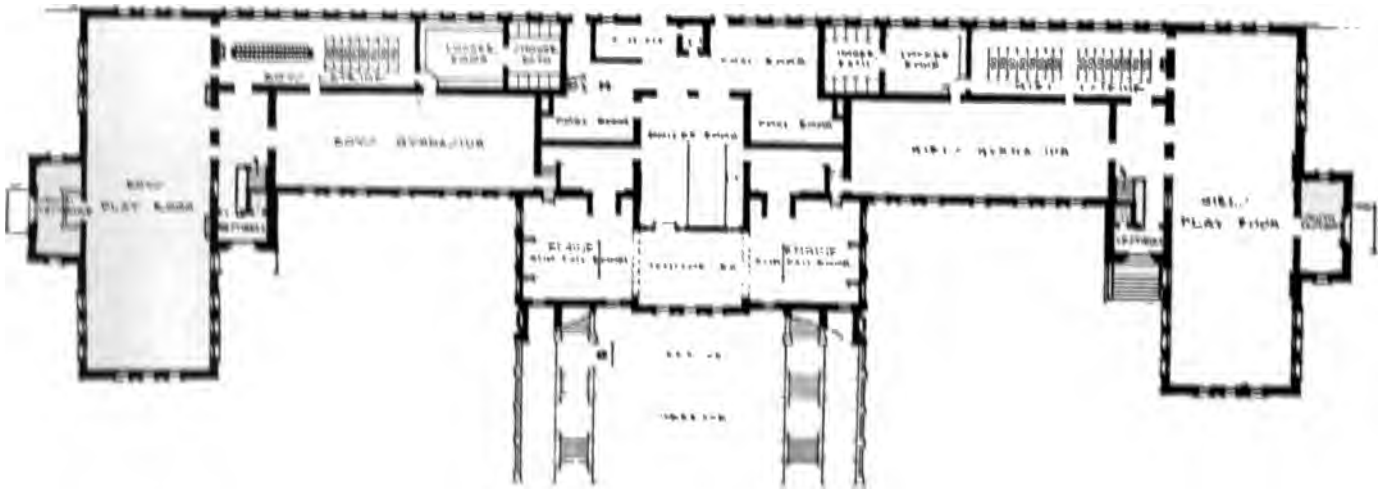
Ventilating machine



BAIDEN SCHOOL ST. LOUIS WM. B. ITTNER, ARCHITECT.

(Plan of basement, showing ventilation system.)

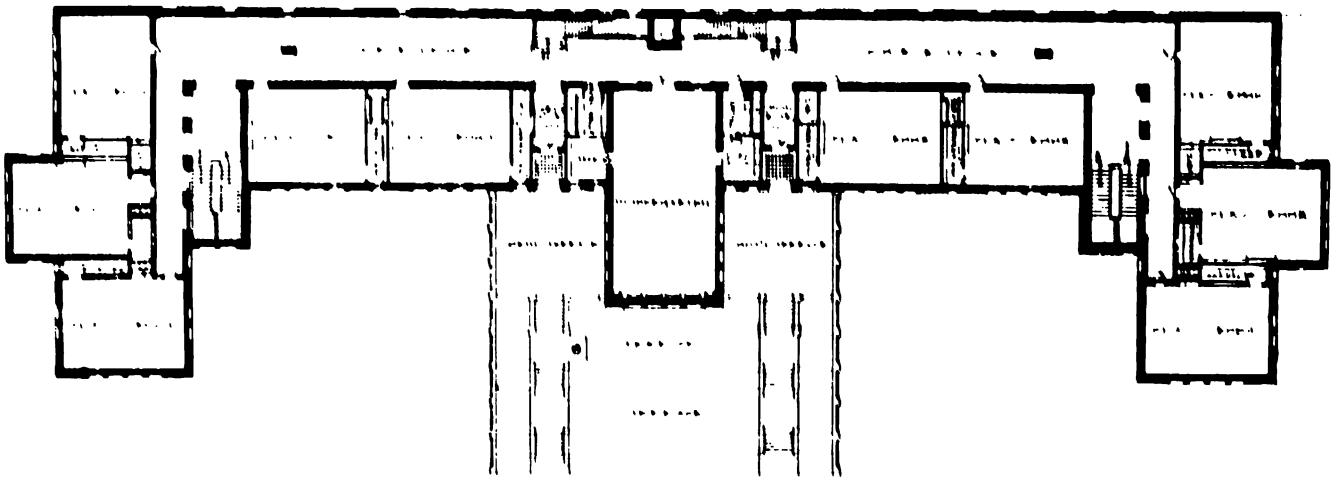
PATRICK HENRY SCHOOL ST. LOUIS WM. B. FITNER, ARCHITECT



PATRICK HENRY SCHOOL

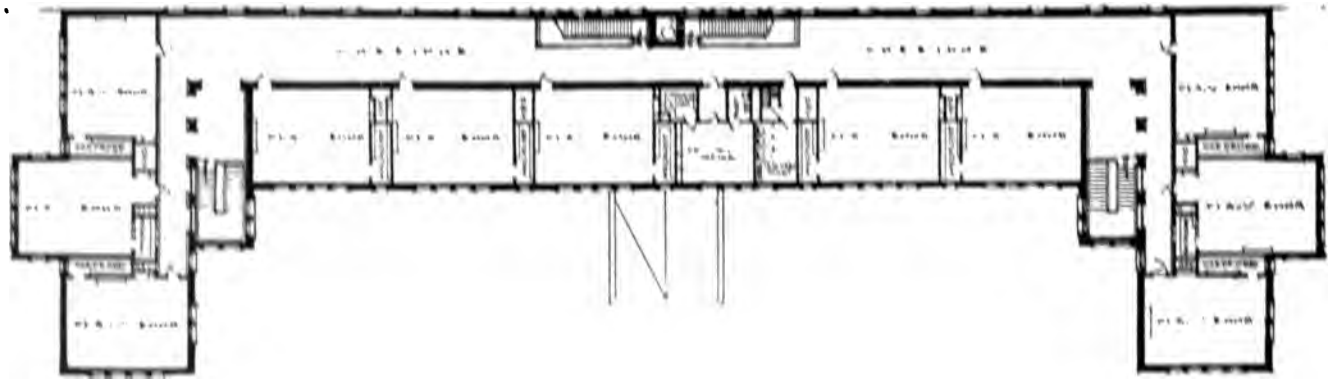
AT TROY

WM. B. ITTNER, ARCHITECT.



PATRICK HENRY SCHOOL

WM. B. ITTNER, ARCHITECT



PATRICK HENRY SCHOOL,

ST. LOUIS

(Second floor plan.)

WM. B. ITTNER, ARCHITECT

PATRICK HENRY SCHOOL,

ST. LOUIS.

(Entrance.)

WM. B. ITTNER, ARCHITECT.

of erection. The main portion of this building is to be 2 stories in height above the basement, with an ample lecture room located on the third floor. There are 18 class rooms, a kindergarten, and a domestic science room, making an equivalence to 21 class rooms.

The mechanical equipment is designed to furnish the air for ventilation at a sufficient temperature to make up for all losses. Thus there will be no unsightly piping or radiators to contend with in any portion of the building. Each duct, with its sizes marked, runs to risers H–1 or H–2, according to whether it leads to a first or second floor room.

For a detail of the apparatus, reference is made to cuts herein. The plant is designed to operate under a steam pressure of 15 pounds, with a back pressure of 2 pounds in the coils. The installation consists of two 8-foot by 4½-foot fans, direct driven by 15-inch by 10-inch and 18-inch by 12-inch engines. The larger engine drives the centrifugal pump for the air washer, in addition to pulling its fan. This washer is located between the 2 sets of tempering coils in a "spray chamber." This washer removes practically all foreign matter from the air by passing the same through finely divided sprays of water. An eliminator removes all excess free water from the air before it comes in contact with the next tempering coil.

The air enters through intake windows, indicated at top of plan, and immediately passes through the first tempering coils. The steam supply to these coils is controlled by a thermostat located in the intake and automatically turns steam into the coils at some point before the outside temperature reaches the freezing point, thus protecting the washer from freezing. By-pass doors are located at the side of coils and these are gradually opened or closed by a thermostat located immediately past the eliminator. Thus a constant temperature may be maintained for the air as it strikes the washer. This is a matter of considerable importance, as it has a bearing on the ultimate relative humidity of the air.

After passing the eliminator the air meets the second set of tempering coils, which brings the air up to a temperature of 70°. The air then divides and passes into the 2 fans.

Each fan drives the air through the heating coils into the "hot room," and under the same coils into the "tempered air room." Thus the tempering air is not heated after leaving the fan. A thermostat is located in this latter compartment, for controlling the by-pass doors under the second set of tempering coils, thus maintaining a constant temperature of 70°. Tempered air, hot air, or a mixture of the two, is forced by the fan into the air ducts. A thermostat located in each class room controls the proportionate quantities by means of mixing dampers, and thus a temperature is maintained varying not in excess of 1° either side of a given point.

A fresh-air supply of 30 cubic feet per minute is allowed for each pupil. This necessitates about 8 complete changes of air per hour in every class room. Since the corridors and basement are occupied intermittently, 4 changes per hour are planned for these localities. All plants are designed to secure these results with a safe margin of reserve in case it should be required for any reason.

The usual boiler installation consists of two 60-inch by 16-foot return tubular units with downdraft furnaces. Except in extreme weather one boiler is all that is needed and for this reason but 1 large boiler is seldom installed, it being preferred to use 2 smaller ones to economize the fuel as well as to save head room. Air movements in the rooms have been tested and it is found that the fresh air enters at a velocity of about 300 feet per minute near the ceiling, evenly distributed over the rear two-thirds of the room, gradually driven downward by the fresher air behind, then works downward and forward to the wardrobe openings.

A brief tabulation of the cost of some of the recent buildings in this city is given later in this report and the Commission considers itself fortunate to be able to show so many views of these handsome buildings.

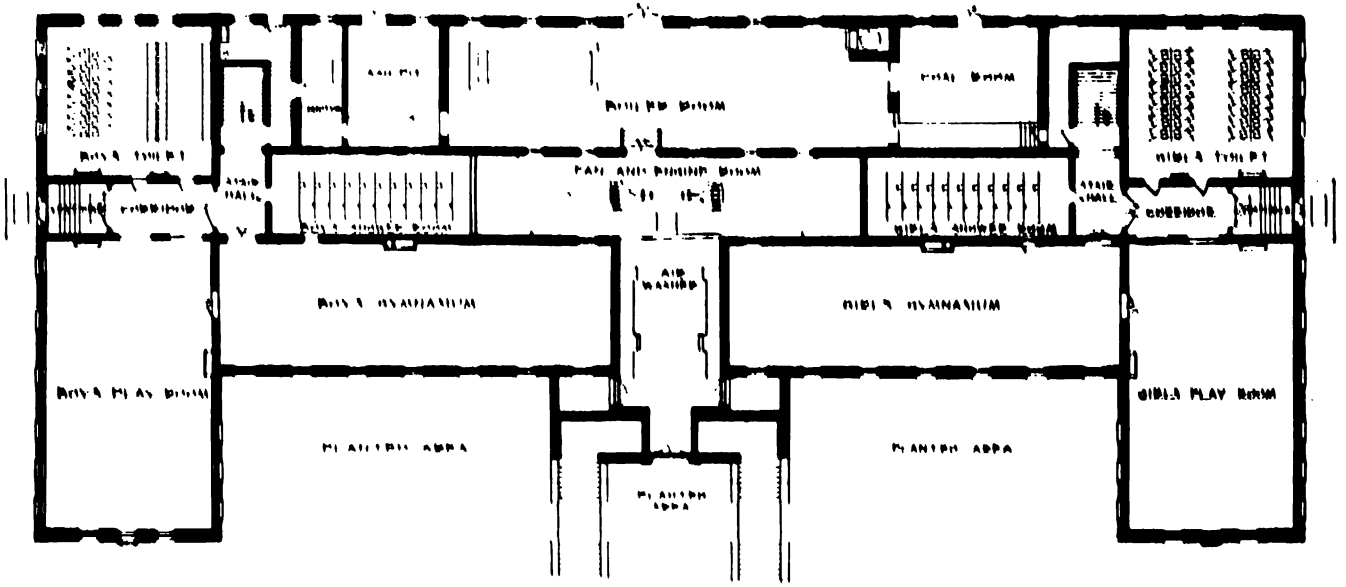
Three types are submitted in plan also, first, of the Patrick Henry School, which has no rooms behind the corridor, has 2 main entrance steps, with the kindergarten room extending in front of the main face of the building between the 2 entrances. Stairs in this type are in the front of the building at the end of the corridor and also in the corridor just opposite the entrance. Basement entrance leads into 2 play rooms at the middle of each end of the buildings, the play rooms extending the full depth of the building, the toilet rooms being inside against the rear face, girls' and boys' gymnasium occupying the space between the play rooms and the center of the building. This type has 21 class rooms and a kindergarten, the kindergarten extending only through the first floor and having twice the size of an ordinary room. The space occupied by 1 class room is given up to principal's office and teachers' toilet on the second floor.

The Patrick Henry School, which is the one selected as the type, is located in a very congested section of the city where the children are of foreign birth, and is provided with boys' and girls' shower baths, and with an installation for washing air in the inlet chamber.

The second type is the Lafayette type, where there is a single main entrance, 2 class rooms on each side in the face directly flanking it and a large kindergarten directly opposite. Stairs in this type are in the back of the building, opposite the ends of the corridor.

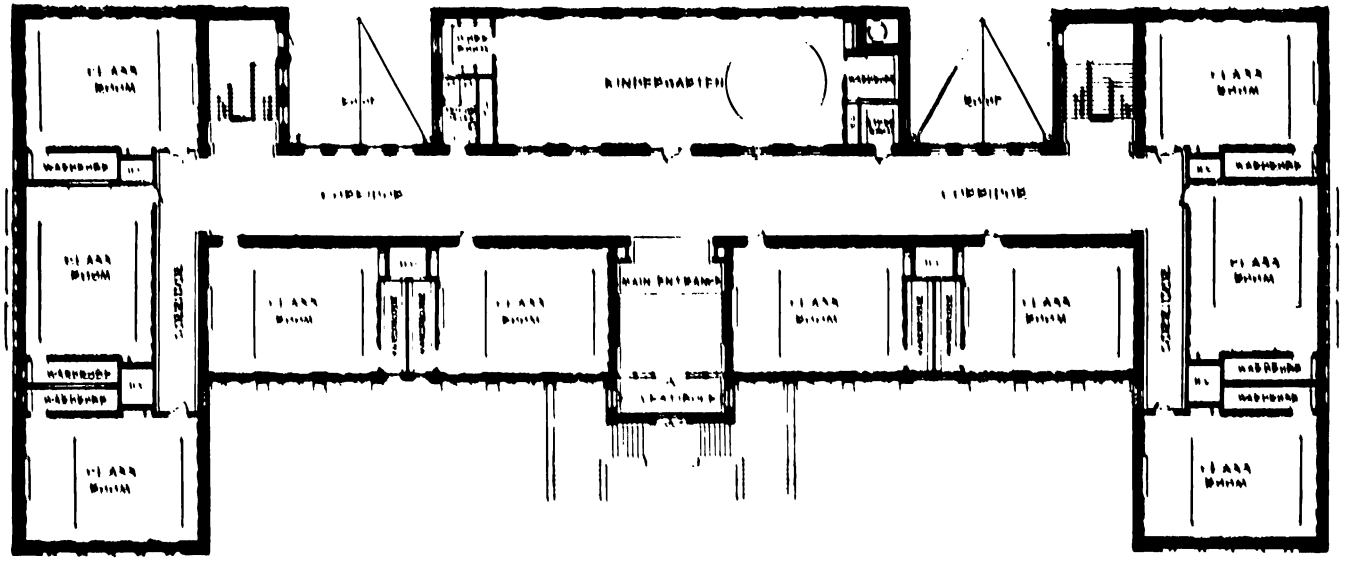
The third type, and possibly the best, is similar to the first type as to the location of the stair, but similar to the second type as to the location of rooms. It is slightly longer than the second type and

LAFAYETTE SCHOOL ST. LOUIS WM. B. FISHER, ARCHITECT



LAFAYETTE BUILDING — ST LOUIS — WM B ITTNER, ARCHITECT.

(Basement plan.)



LAFAYETTE BUILDING — WM. B. ITTNER, ARCHITECT

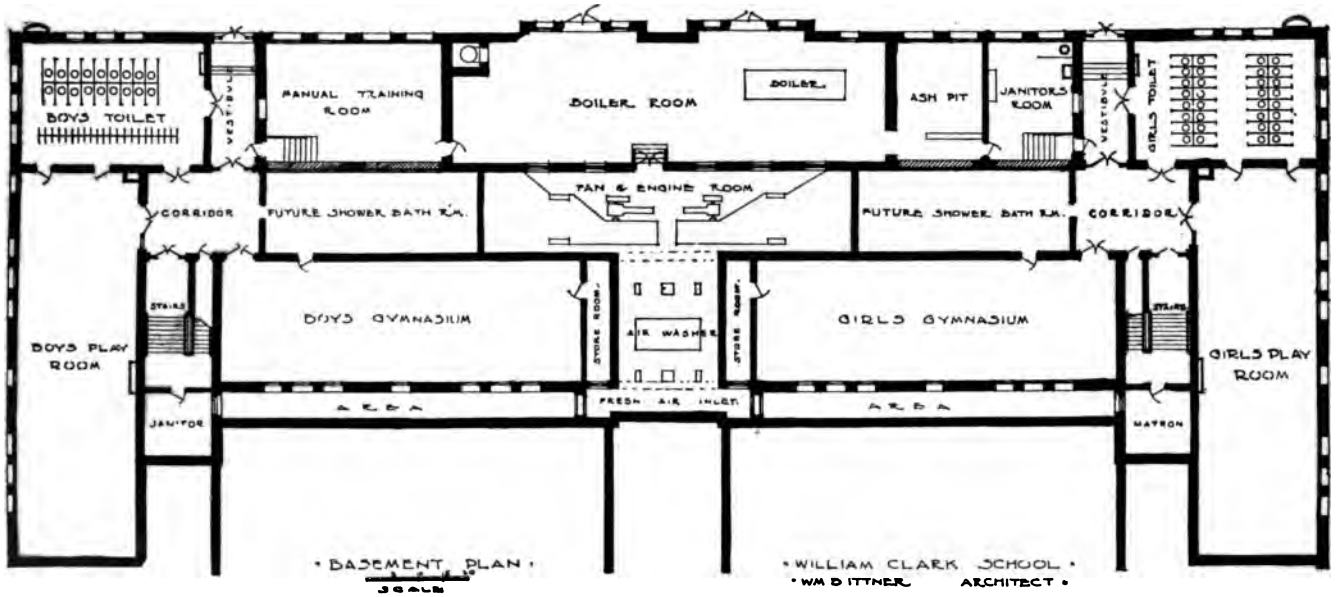
(First floor plan.)

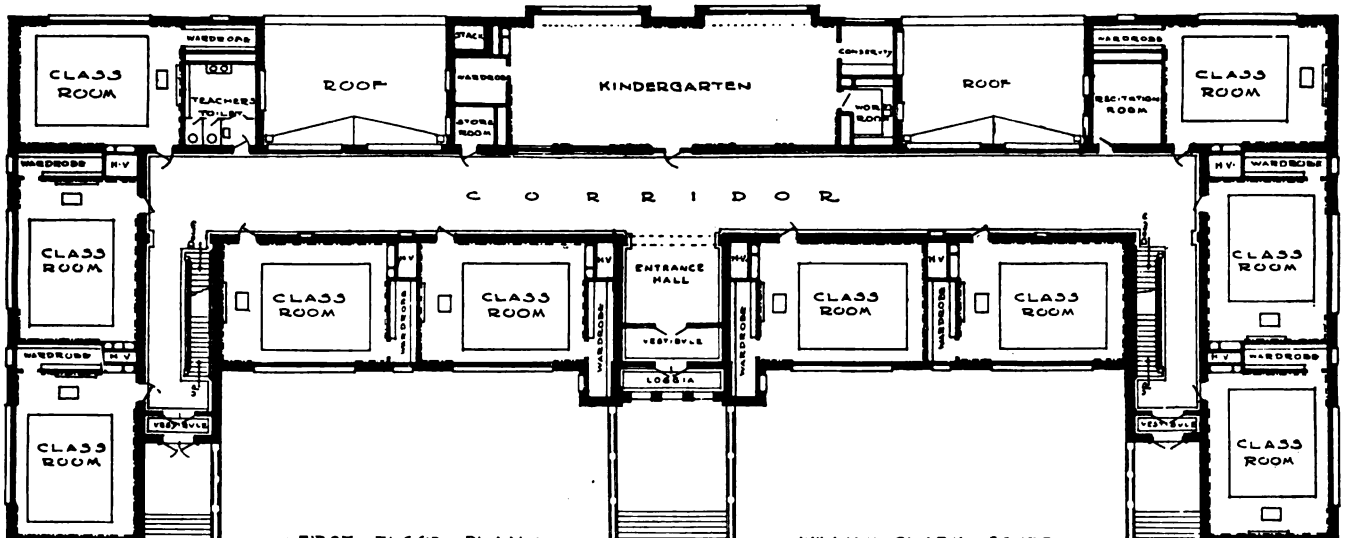
LAFAYETTE SCHOOL — ST. LOUIS — WM. B. ITTNER, ARCHITECT.

(Second floor plan.)

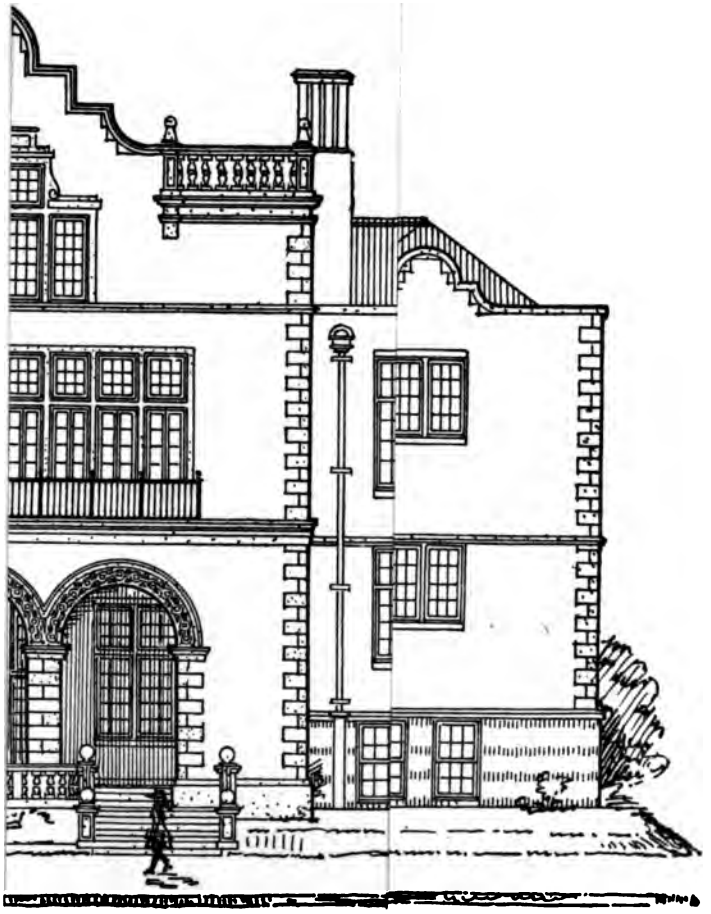
WILLIAM CLARK SCHOOL ST. LOUIS WM. B. ITTNER, ARCHITECT

WILLIAM CLARK SCHOOL. ST. LOUIS. WM. B. ITTNER, ARCHITECT.


BOYS TOILET
VESTIBULE
MANUAL TRAINING ROOM
BOILER ROOM
BOILER
ASH PIT
JANITORS ROOM
VESTIBULE
GIRLS TOILET
CORRIDOR
FUTURE SHOWER BATH R.M.
FAN & ENGINE ROOM
FUTURE SHOWER BATH R.M.
CORRIDOR
STAIRS
BOYS GYMNASIUM
STORE ROOM
AIR WASHER
STORE ROOM
GIRLS GYMNASIUM
STAIRS
BOYS PLAY ROOM
GIRLS PLAY ROOM
JANITOR
AREA
FRESH AIR INLET
AREA
MATRON
BASEMENT PLAN
SCALE
WILLIAM CLARK SCHOOL
WM D ITTNER ARCHITECT


CLASS ROOM
WARDROBE
H.V.
TEACHERS TOILETS
ROOF
STACK
STORE ROOM
KINDERGARTEN
CONSERVY
WORK ROOM
RECITATION ROOM
C O R R I D O R
CLASS ROOM
ENTRANCE HALL
VEST/BULE
LOGGIA
• FIRST FLOOR PLAN •
SCALE
• WILLIAM CLARK SCHOOL •
• WM B ITTNER ARCHITECT •

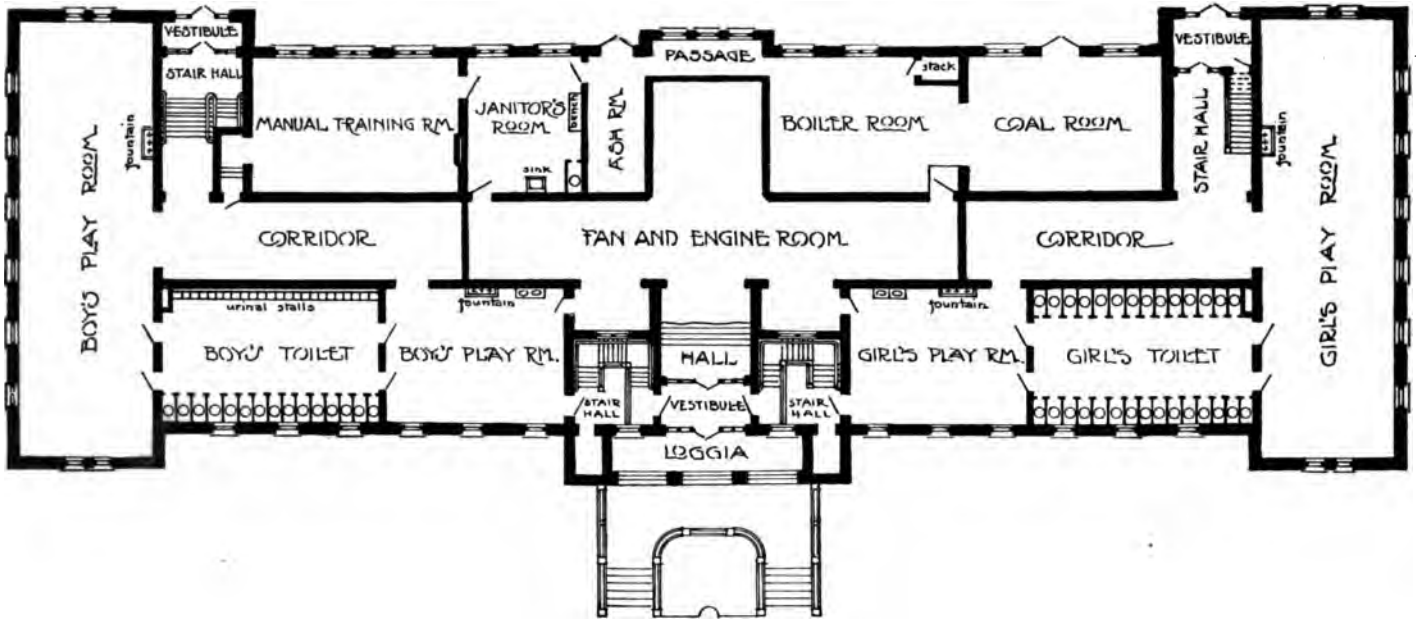
WILLIAM CLARK SCHOOL ST. LOUIS WM. B. FEENEY, ARCHITECT



B.

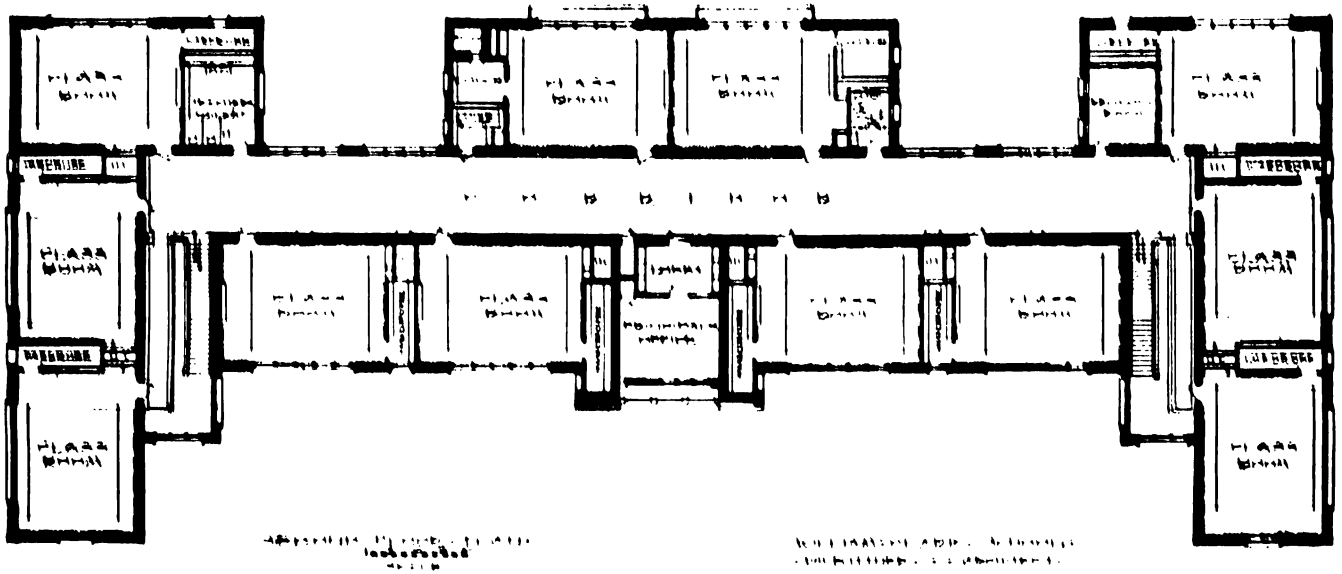
WM. B. ITTNER, ARCHITECT.

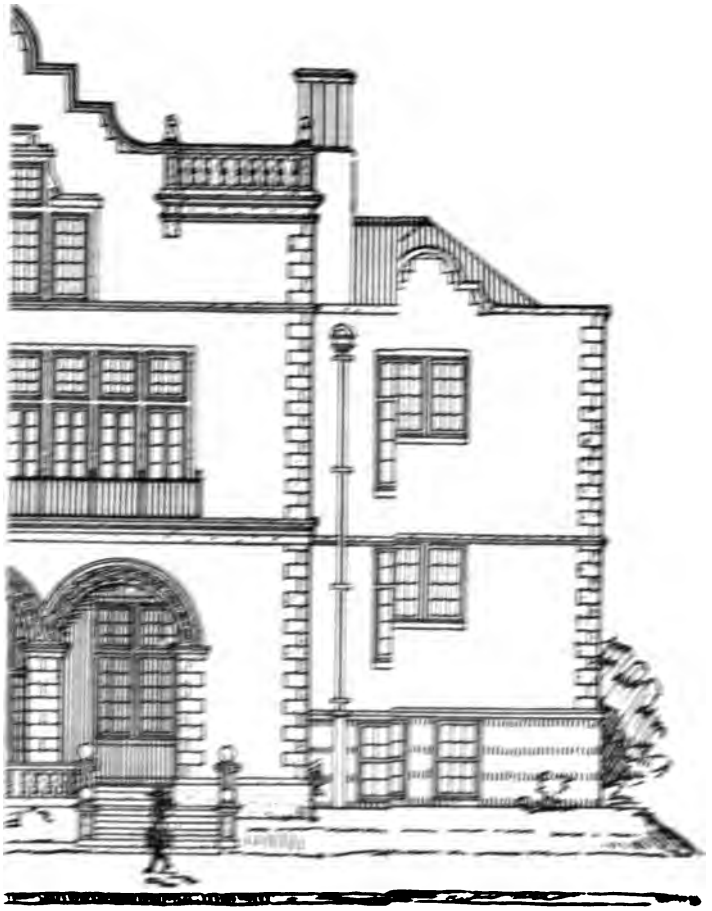
1.)



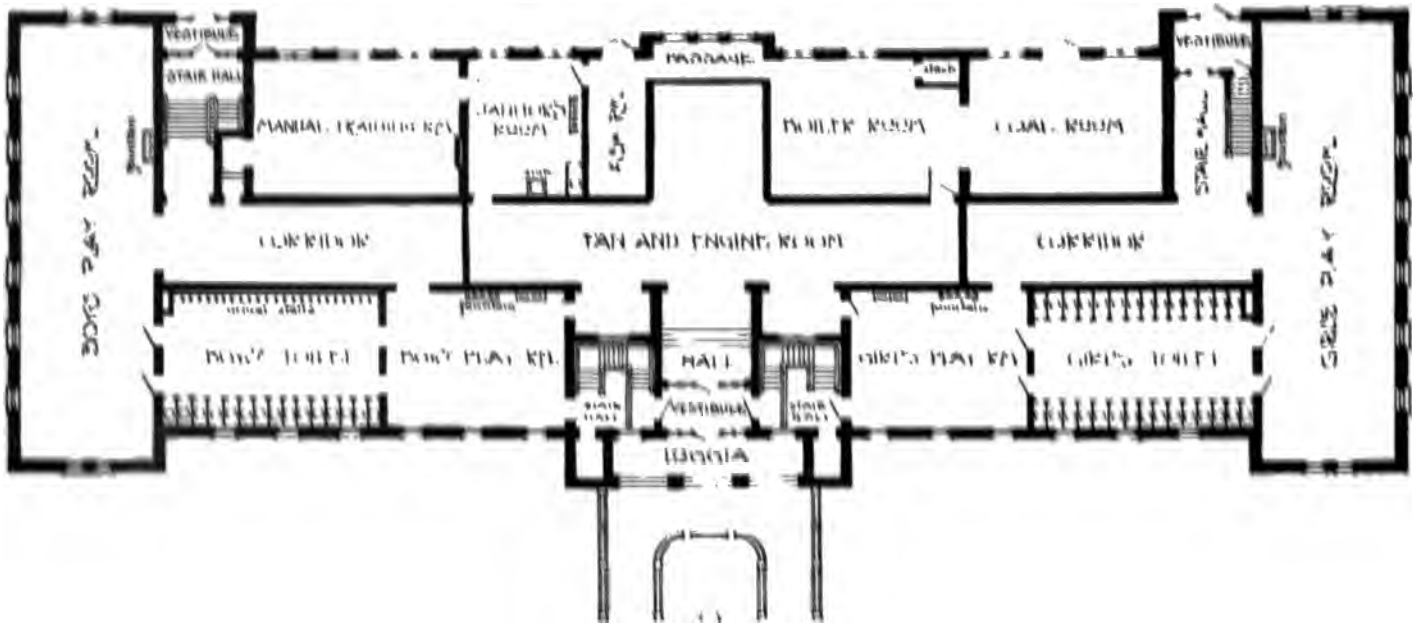
OAK HILL SCHOOL. ST. LOUIS. WM. B. ITTNER, ARCHITECT.

(Basement plan.)

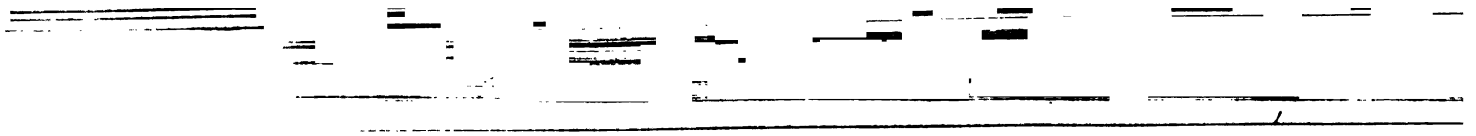


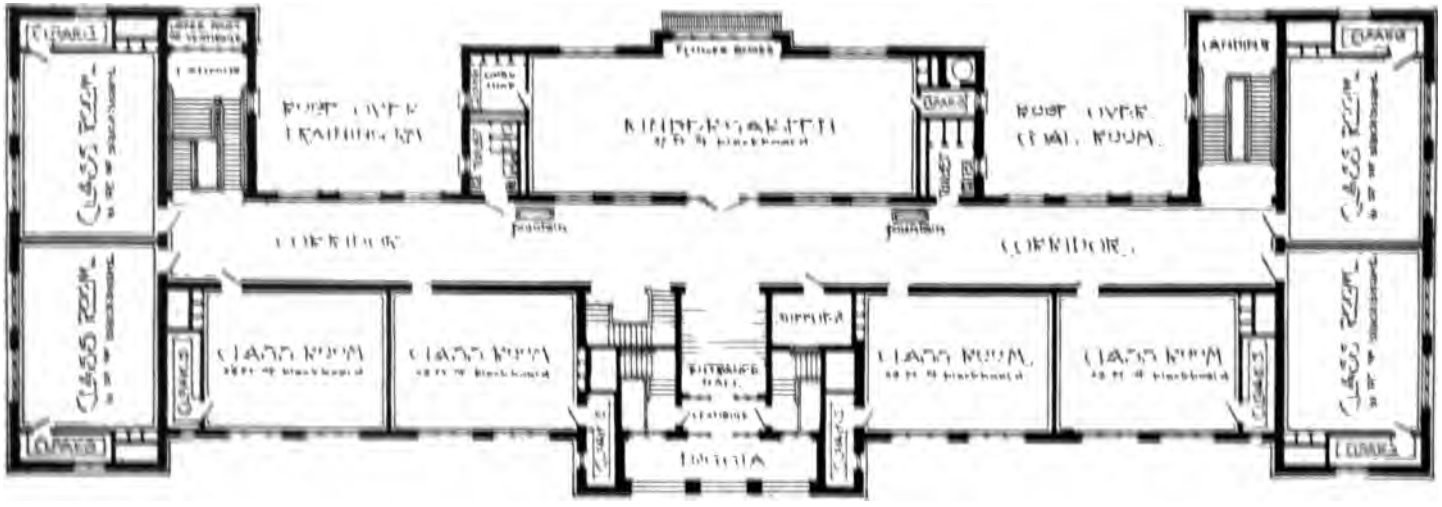


MR. E. [illegible]ER, ARCHITECT.



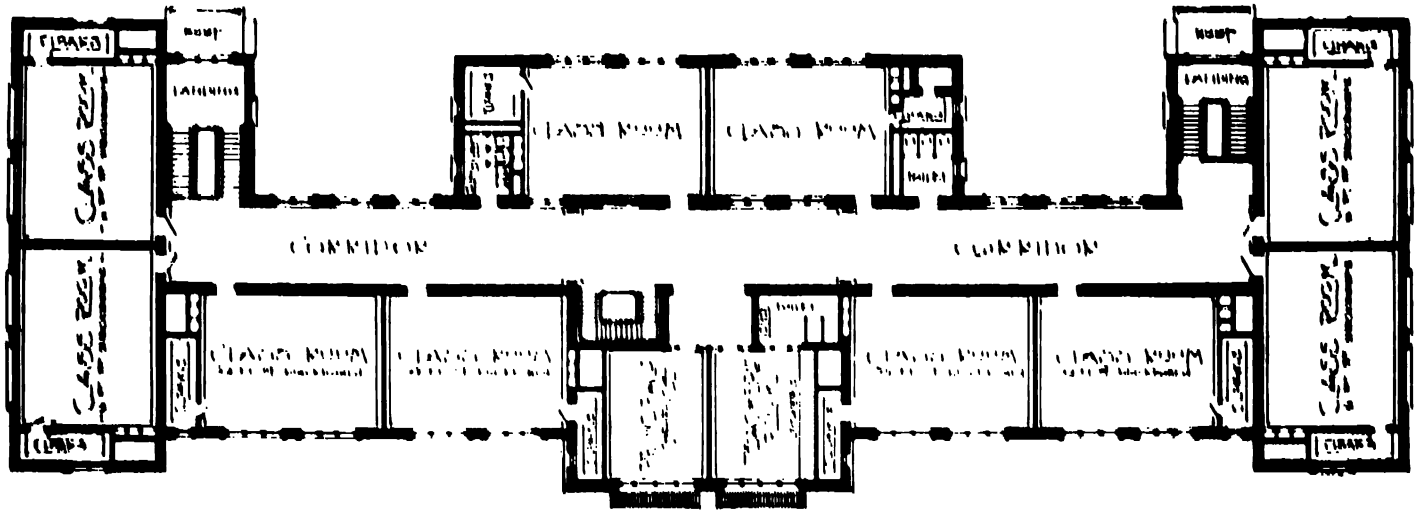
WM B TUTHILL, ARCHITECT





OAK HILL SCHOOL — ST. LOUIS — WM. B. FISHER, ARCHITECT.

(First floor plan.)

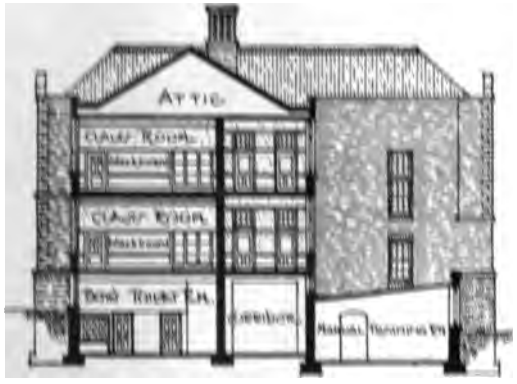


OAK HILL SCHOOL

ST. LOUIS

WM. B. ITTNER, ARCHITECT

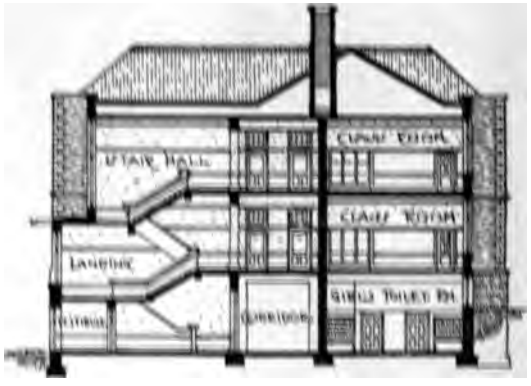
Second floor plan

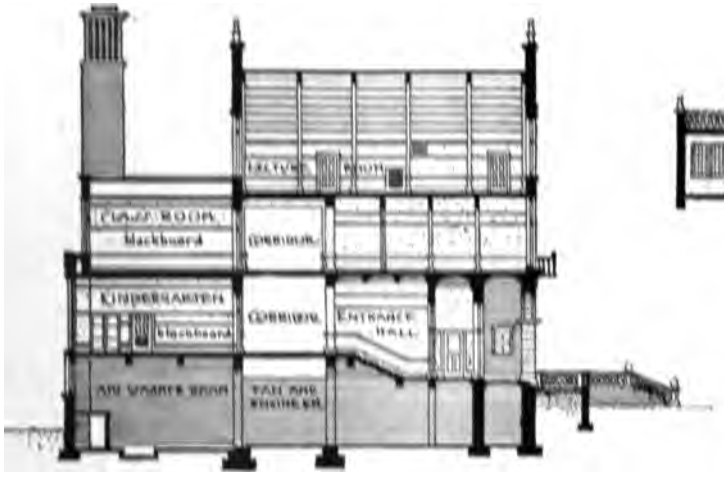


OAK HILL SCHOOL

ST. LOUIS

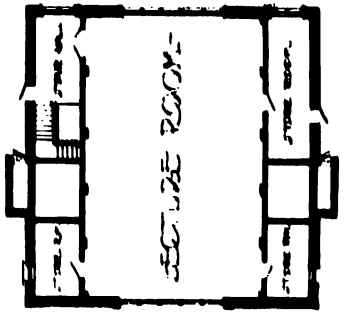
WM. B. ITTNER, ARCHITECT.





OAK HILL SCHOOL.

Lecture room in roof space.

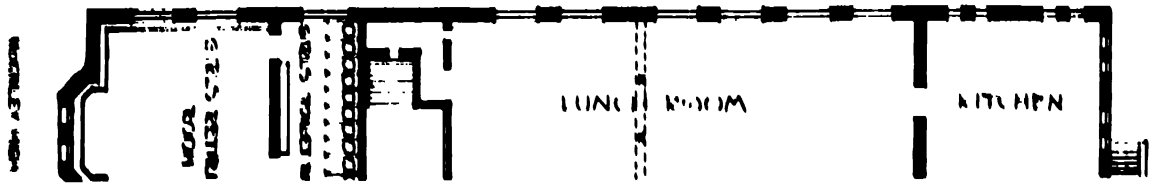


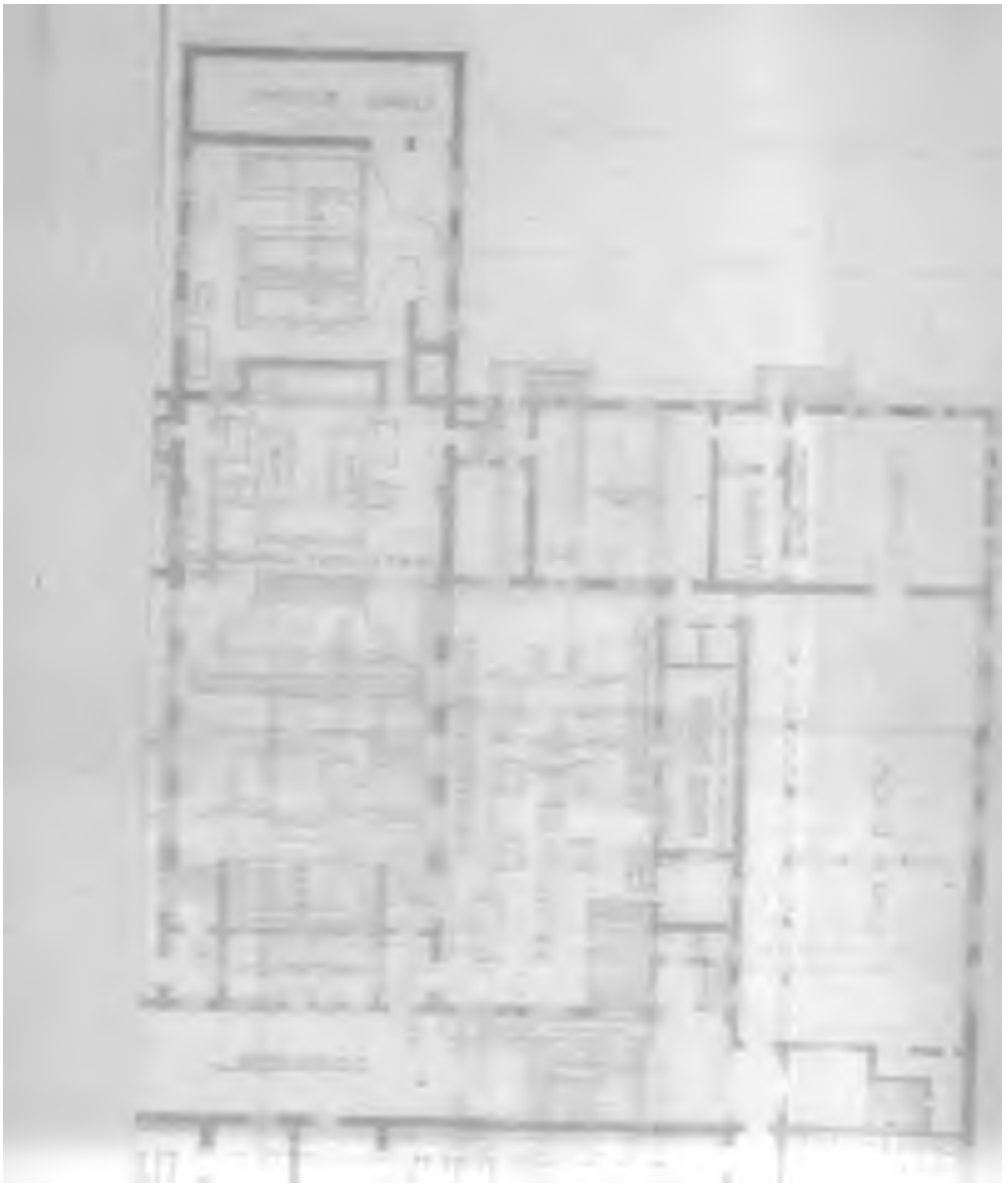
ST. LOUIS

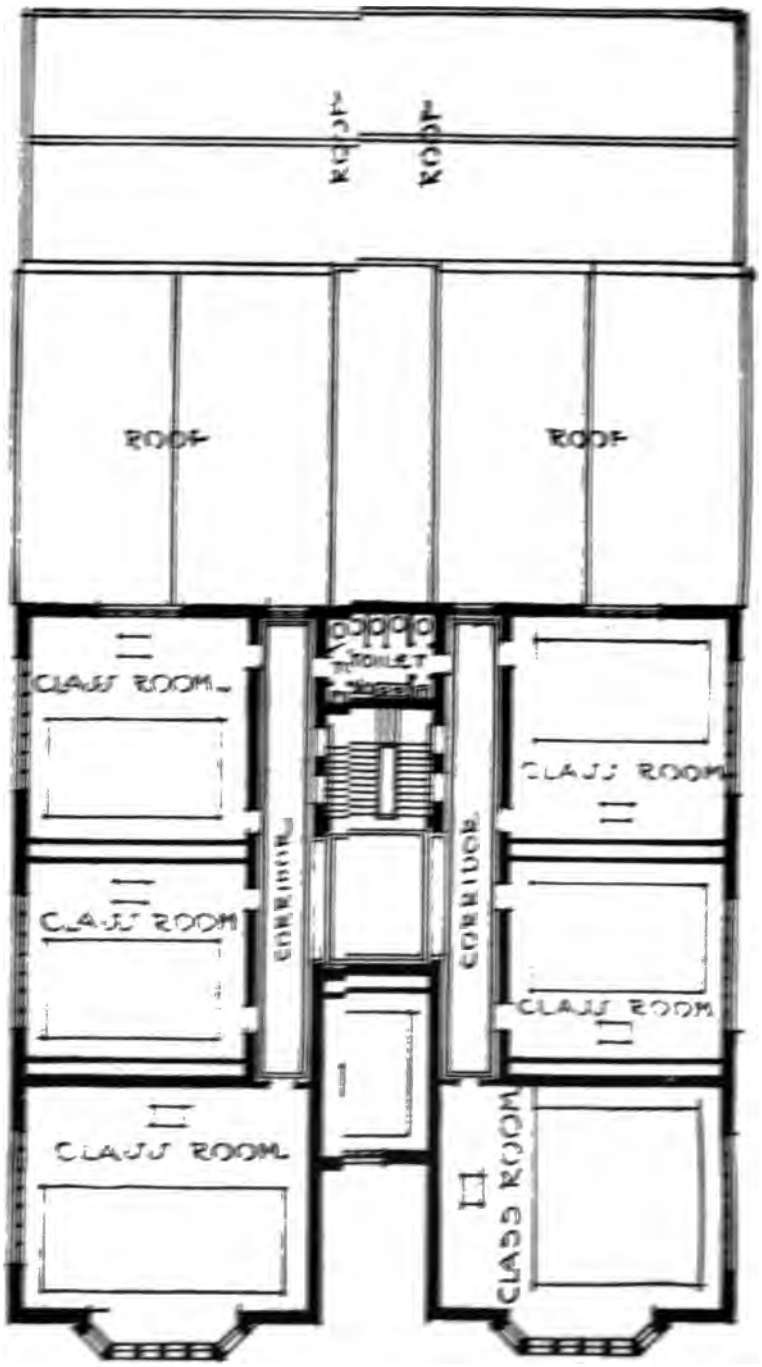
(Plan of lecture room and sections.)

WM. B. ITTNER, ARCHITECT.

McKINLEY HIGH SCHOOL ST. LOUIS WM. B. ITTNER, ARCHITECT

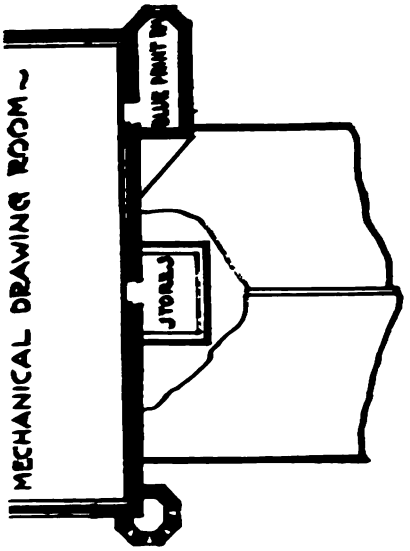


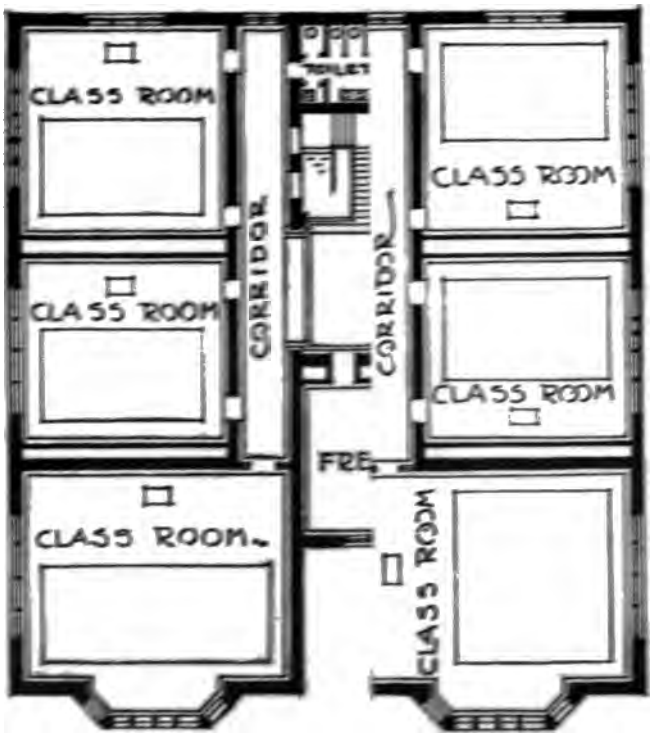




WOKINLEY HIGH SCHOOL

WM. B. ITTNER, ARCHITECT.

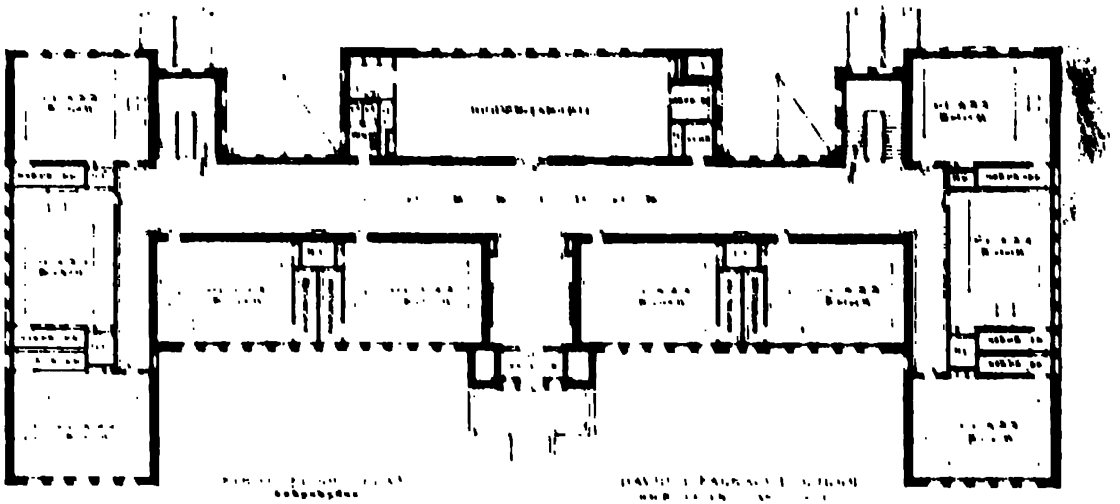




WORKLEY HIGH SCHOOL.

WM. B. ITTNER, ARCHITECT.

HENRY T. BLOW SCHOOL ST. LOUIS WM. B. ITTNER, ARCHITECT.



WM. B. TUTHILL, ARCHITECT

[illegible] BUSH SCHOOL [illegible] ST. LOUIS [illegible] WM. B. [illegible]NER, ARCH[illegible]ECT

ROSEDALE SCHOOL. CLEVELAND. F. S. BARNUM, ARCHITECT.

materials is responsible. The costs given include the preparation and improvement of the sites and the buildings complete, exclusive only of the cost of the land and the furniture of the school.

Name of school.	Date.	Rooms.	Sittings.	Cost of—		Cost per—		
				Site.	Building.	Cubic foot.	Pupil.	Room.
						Cents.		
Blow	1904	24	1,200	$4,950	$150,981	15.7	$125.81	$6,290
Cote Brilliante	1904	24	1,200	8,340	162,829	17	135.69	6,785
Clay	1904	24	1,200	10,000	159,407	19.4	132.84	6,642
Shepard	1905	24	1,200	12,500	162,229	16.5	135.19	6,760
Patrick Henry	1905	24	1,145	60,500	203,313	18	177.56	8,471
Lafayette	1905	24	1,200	37,500	172,361	19.8	143.63	7,182
Franz Sigel	1905	24	1,200	11,401	158,596	17	132.16	6,608
Hempstead	1905	24	1,200	13,150	180,561	17.1	150.47	7,525
Wyman	1901	20	1,000	16,000	128,888	14	128.88	6,444
Wm. Clark	1905	24	1,200	42,000	188,902	19.1	157.41	7,871
Farragut	1905	24	1,200	18,693	174,165	17.1	145.13	7,257
Teachers' College	1904	10	270	20,800	149,577	21.7	553.98	9,348
McKinley High	1904	.....	1,103	28,400	387,247	17.5	351.08	.....
Yeatman High	1904	.....	1,103	41,100	390,410	17.7	302.11	.....
Oak Hill	1907	24	1,200	16,475	175,004	23.2	175.00	7,292

The Commission is indebted to Mr. William B. Ittner for the many details and handsome photographs of these schools.

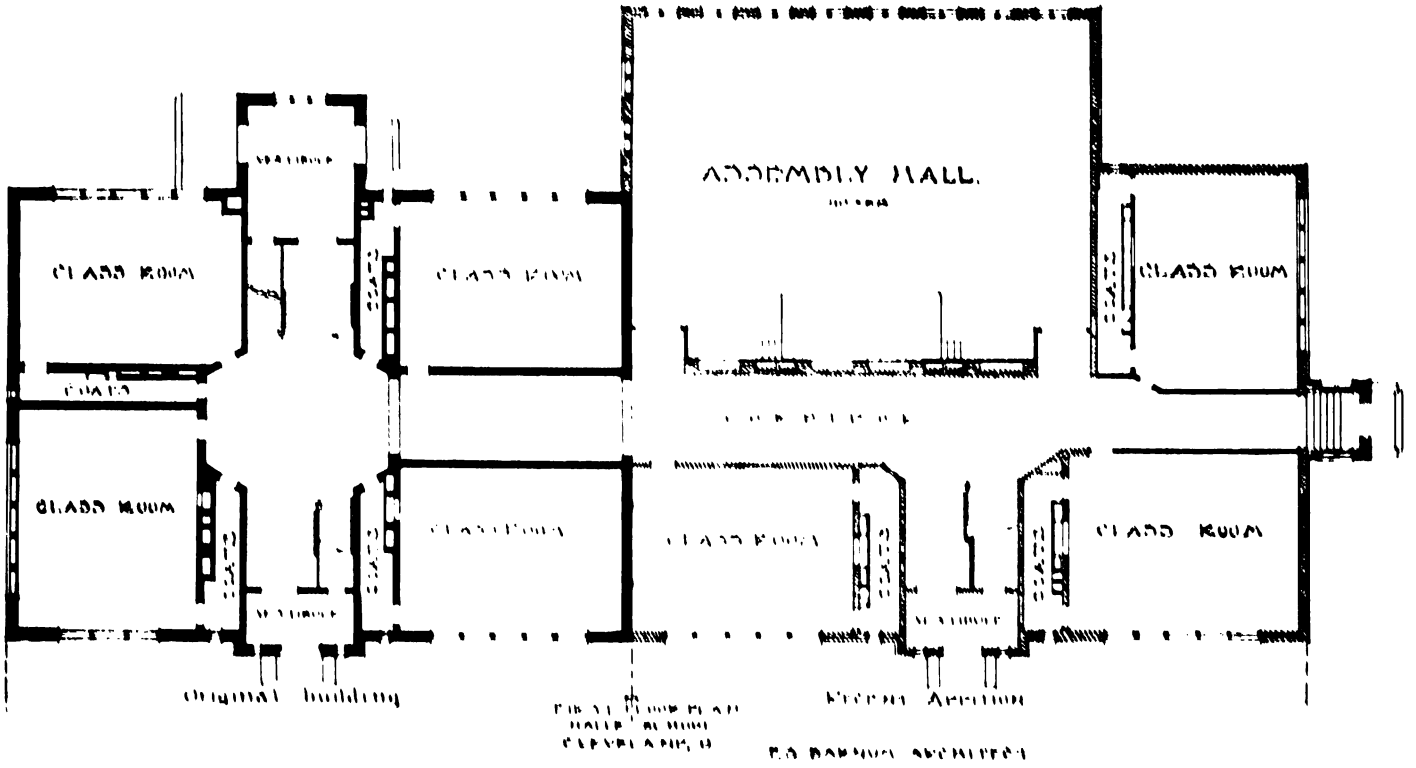
CLEVELAND SCHOOLS.

In Cleveland Mr. F. S. Barnum, architect of the board of education, has, in the past few years, prepared plans for a number of fine school buildings and carried some to execution. One good example is the Marion School, this being an annex to the old Normal School, built with connecting corridors to the old building, the architect's problem being thereby simplified by the fact that no administration rooms had to be supplied. The building contains 12 class rooms on 2 floors, with central corridor, and it is notable possibly by reason of the fact that all of the rooms in the building are identical. All have unilateral light, open cloak rooms, with heating device for securing ventilation of wraps, and the entire structure showing fine attention to detail. The basement contains good play rooms and the double building a yard besides.

WATTERSON SCHOOL.

The Watterson School, of which a view and plan are shown * is a fine 2-floor building, which shows careful study to adapt to a rather irregular site, securing maximum playground space, best light for the class rooms, and a good assembly room. The lot in this case was rather small and a 10-room school building was required. In order to have playground space of any size it was necessary to place the building in the corner of the lot, utilizing one side of the lot through most of its length as a party wall and another side in the same way, excepting for an alley driveway for fuel supply, the building being

* Not printed.


ASSEMBLY HALL
CLASS ROOM
CLASS ROOM
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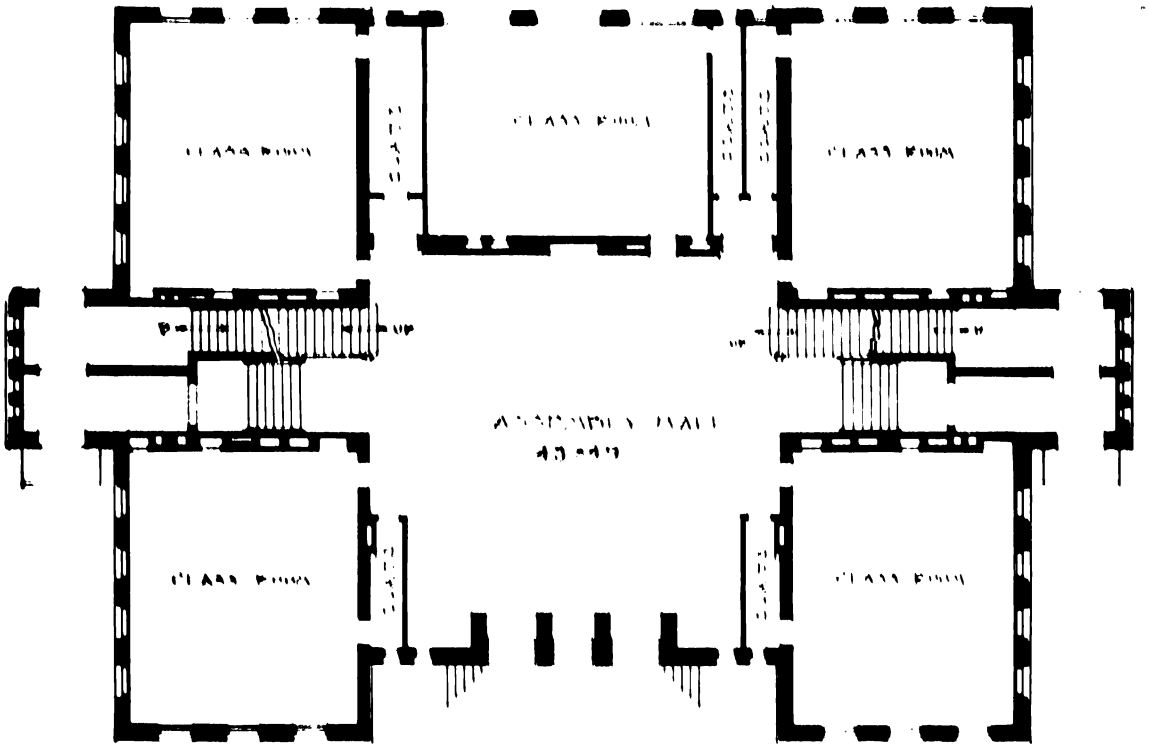
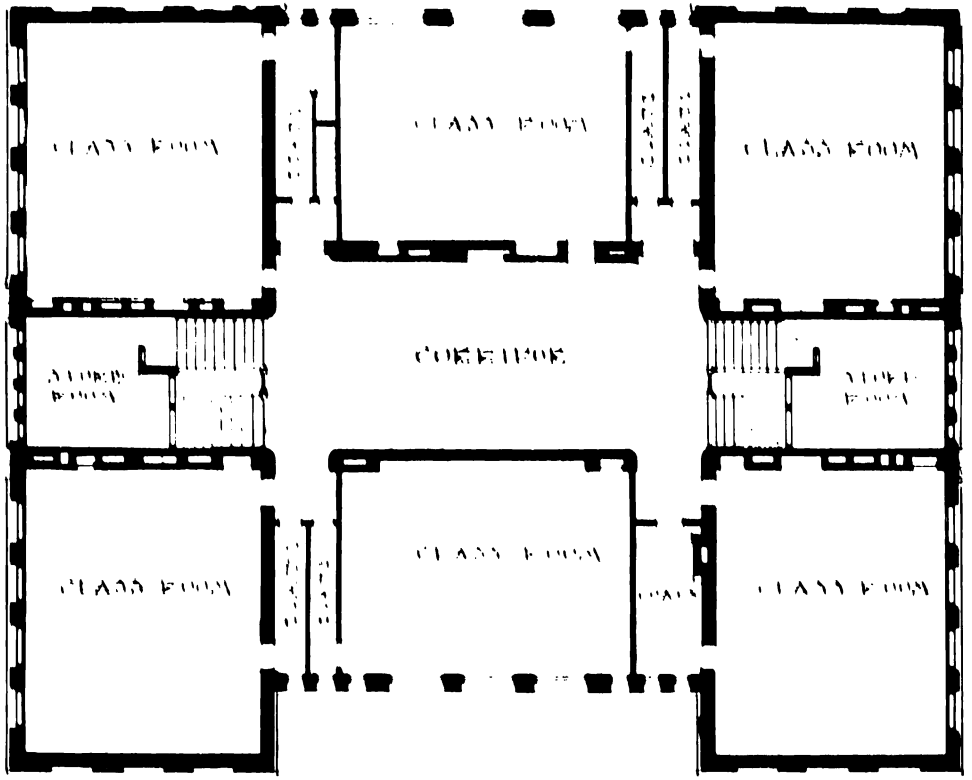
CLASS ROOM
Original building
Recent Addition

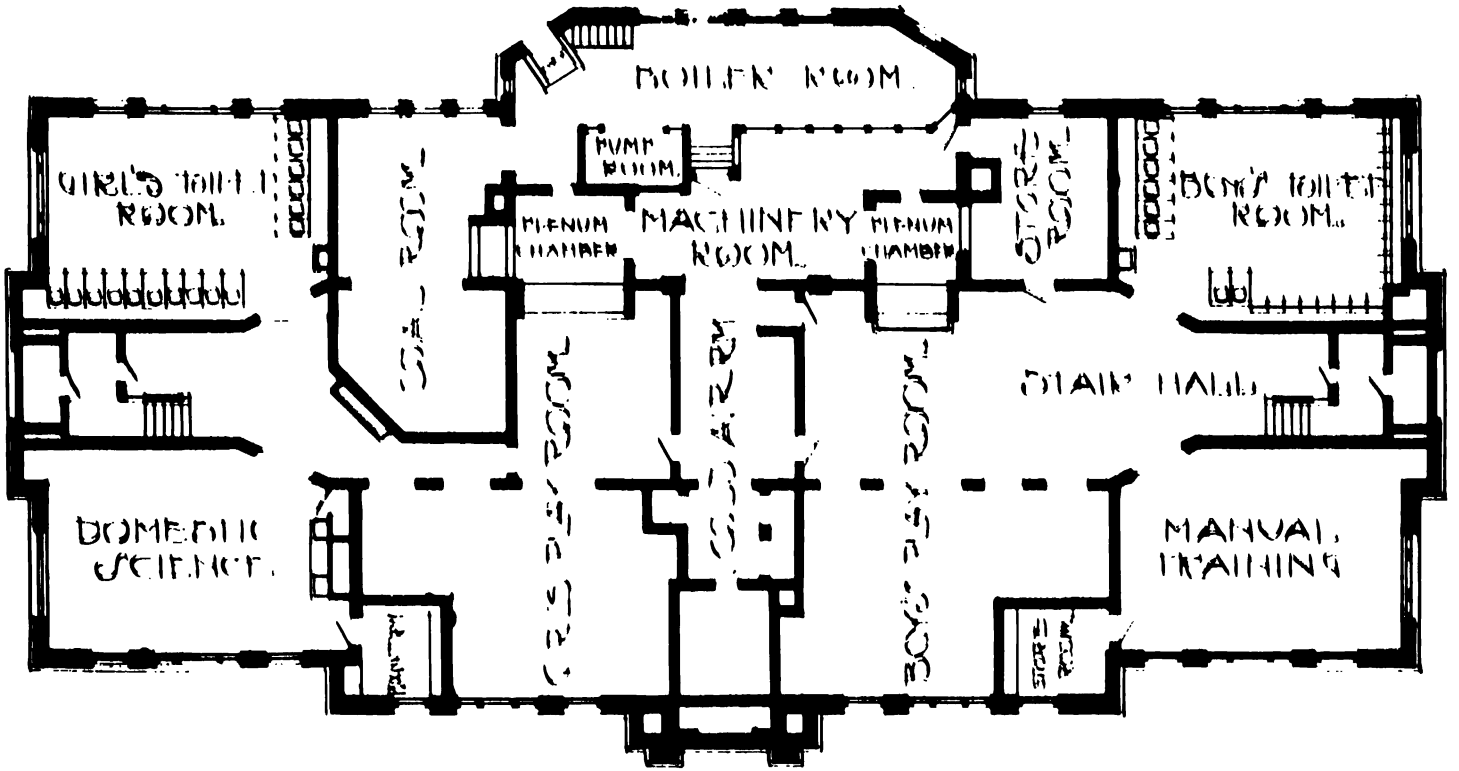


FIRST FLOOR PLAN
ROAN SCHOOL
CLEVELAND O

P.B. BARNUM ARCHITECT



ROSEDALE SCHOOL. CLEVELAND. F. S. BARNUM, ARCHITECT.



MYRA JONES SCHOOL, DETROIT

Basement plan

assembly hall, and a long, well-equipped garden adjacent to the commodious playground, for instruction in gardening.

In the newest of the Cleveland schools up-to-date methods and details are observable. The unilateral light has been incorporated into their system for the ordinary class rooms, and each such room has a separate cloakroom, which has, however, an entrance into the corridor, and not, as in St. Louis and Boston, restricted to the class room exits and entrances for purposes of discipline.

The Commission is indebted to Mr. Barnum for the plans and details of these buildings.

DETROIT.

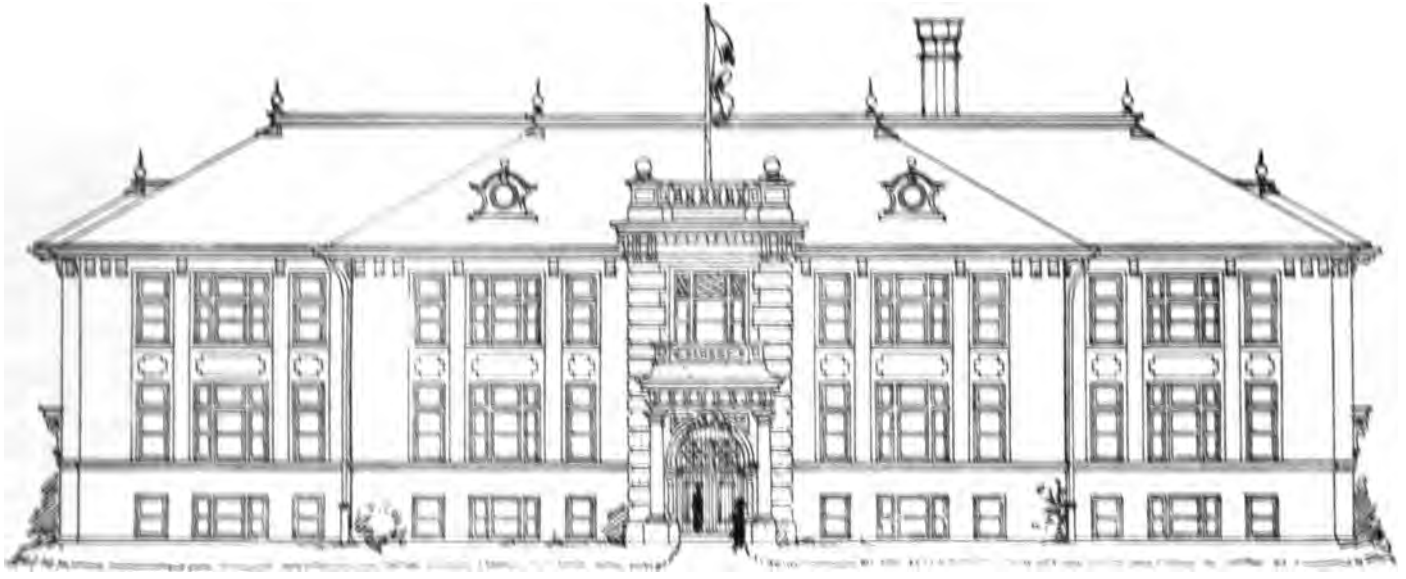
Plans of one of the Detroit elementary buildings are shown. This building is oblong in plan, similar in arrangement to some of the Chicago buildings, with kindergarten room about 30 by 40 feet, located at the head of the entrance stairs, in the middle of the building, with class rooms arranged on both sides of the 12-foot corridor running through the building. The end rooms were lighted from two sides, windows in the two sides being well up toward the ceiling. The other rooms were lighted unilaterally. A notable feature in these rooms is the arrangement of cloakrooms, without doors, with rolling fronts similar to the front of a roll-top desk, this front coming to within 5 inches of the floor, and the vent ducts for the exhaustion of the vitiated air leading off from these cloakrooms. A detail also worthy of note in the ducts was a flexible joint between the housing about the fans and the ducts leading to the schoolrooms, consisting of a joint of heavy canvas, installed to prevent the transmission of vibration. Stairs and halls in these buildings are fireproof, stairs having cast-iron treads, dished out for topping of asphalt, and the corridors are laid in granitoid flooring, which was carried up on the sides, forming a base similar to the hospital base, for quick, thorough cleaning.

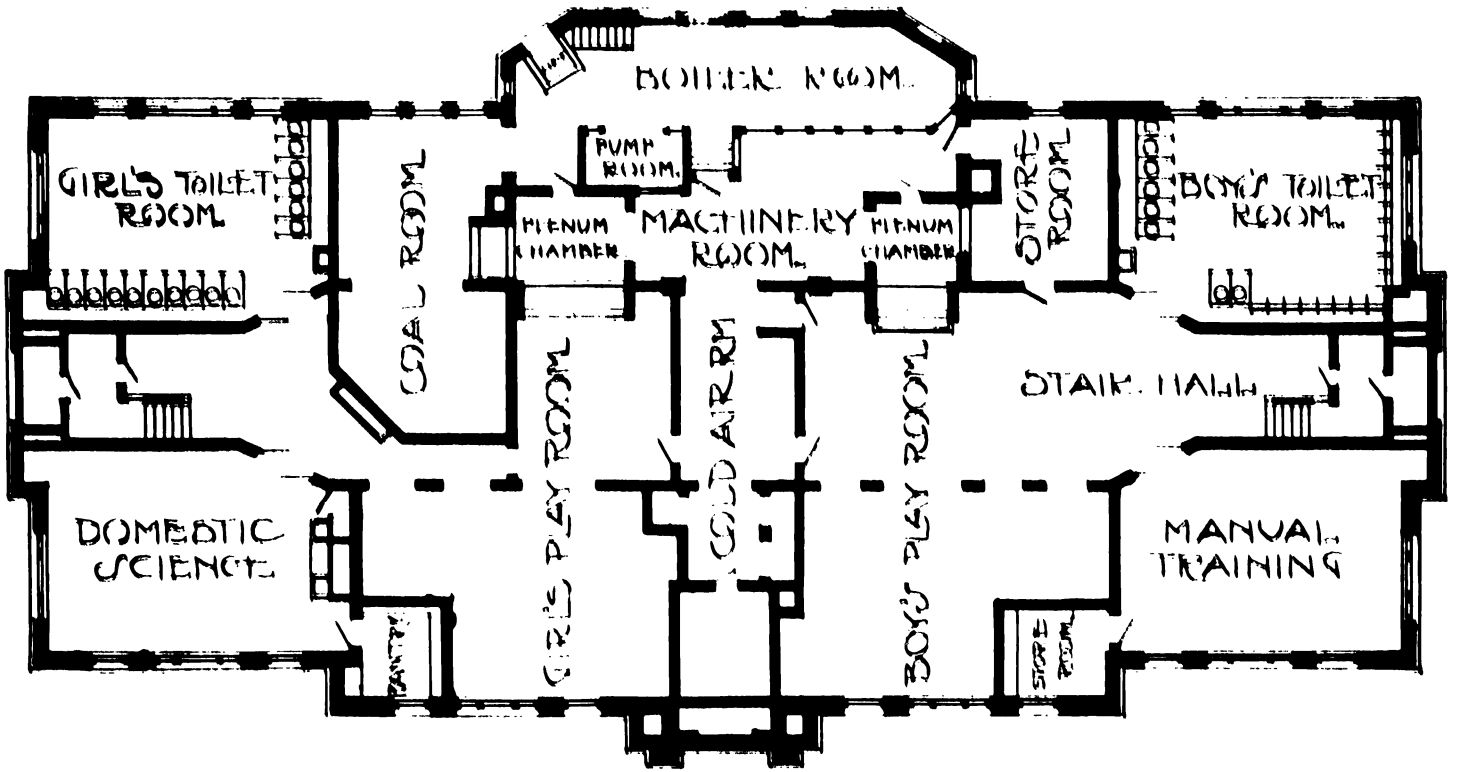
ROCHESTER, N. Y.

In the city of Rochester it was observed that the policy of gradually abandoning small school buildings has been regularly adopted, the city being now tied to the erection of buildings of 20 rooms or over, the new building, if possible, being near enough to the borders of the city to permit of a large enough site to furnish ample playground and a proper spreading of rooms. The architect is employed by the board of education.

SCHOOL NO. 13.

School No. 13 is a handsome building of 2 floors and basement, containing 19 rooms, including a kindergarten. It is U shaped in plan, with a vacant space at the front of the building, which space is





MYRA JONES BUILDING, DETROIT.

(Basement plan.)

ROSEDALE SCHOOL. CLEVELAND. F. S. BARNUM, ARCHITECT.

HEATH SCHOOL. BROOKLINE. PEABODY & STEARNS, ARCHITECTS.

ample in size, well lighted, and equipped for evening school work as well as for day school work, including 2 bench shops, 1 wood-turning shop, 1 forge shop, 1 machine shop, and 1 plumbing shop. The Commission is informed that the evening trade school work conducted by the public school system in this building is as extensive and successful as that anywhere conducted by the public schools.

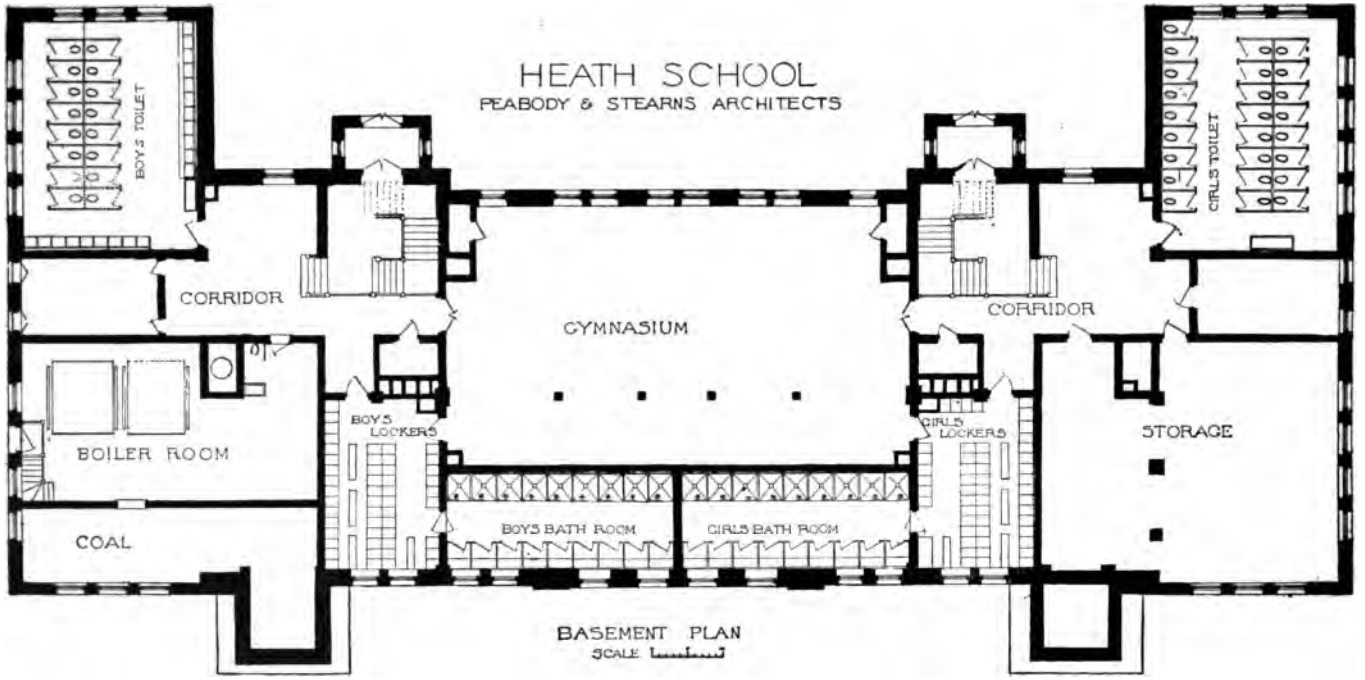
Views are also given of 2 grammar schools: First, the Chestnut Street School, a T shaped, 22-class-room building, constructed of buff brick at a cost of $156,000, to which an addition of 14 rooms is now being made. The other, the Armory Street School, is a very handsome 2-story-and-basement school of 16 rooms, on an ample site, to which, also, an addition is under construction, containing 8 class rooms and 2 kindergartens.

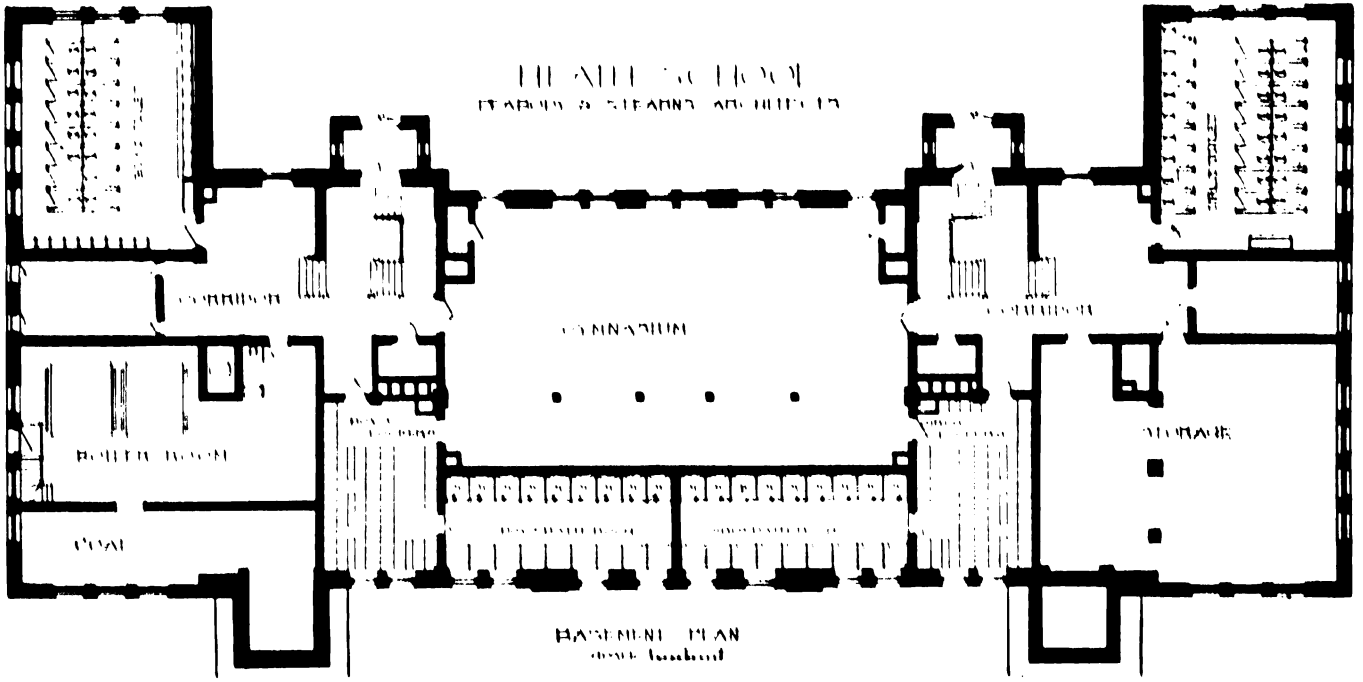
BROOKLINE, MASS.

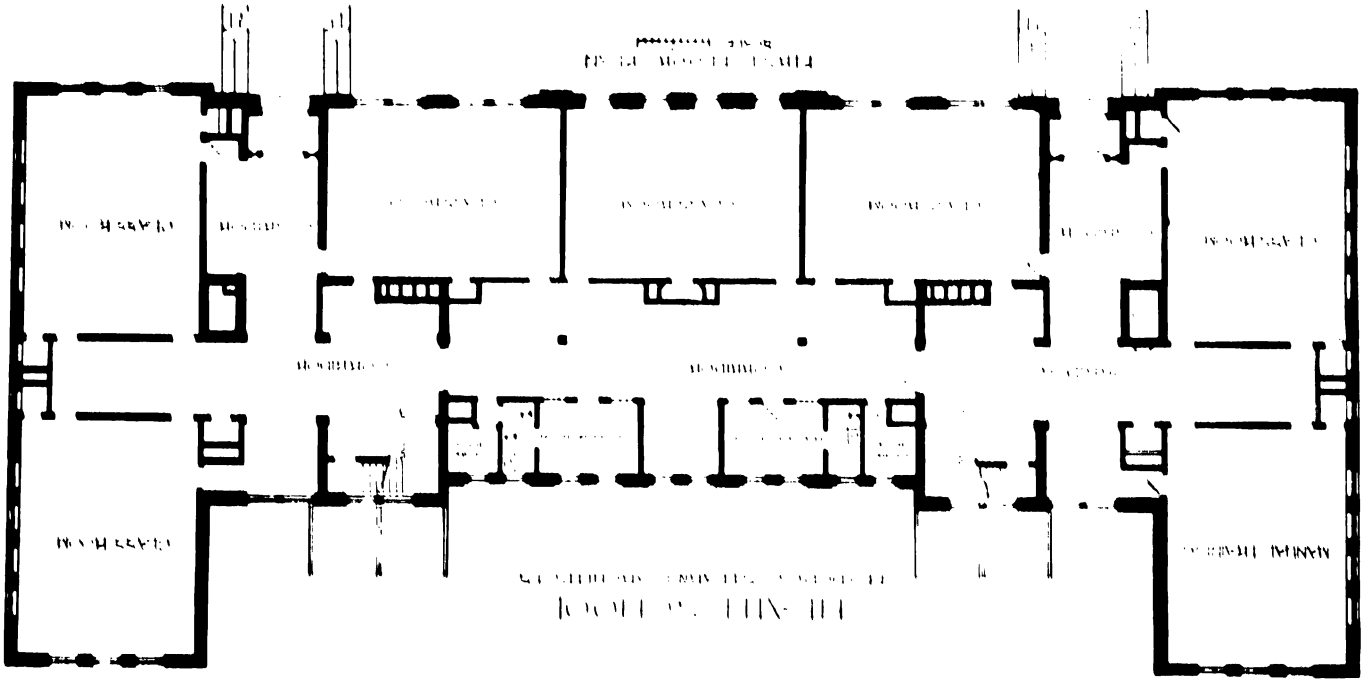
In the city of Brookline, Mass., there are several fine school buildings. In one of these, the Heath, an idea is being carried out which may be of value at some future time in many other cities. This school is located on a fine large farm, or park, in a comparatively thinly populated section where land is relatively cheap. The children are transported to the school in barges from some of the more congested districts. The land surrounding the building is used for playgrounds, gardens, and general park purposes. The building is a handsome structure, 2 stories and basement, the basement containing boys' and girls' toilets at opposite ends of the building, a large gymnasium in the center and boys' and girls' bathroom and locker rooms annexed, the mechanical installation occupying one front corner room, the opposite corner being used for storage. On the first floor there are 7 class rooms, 1 of which is a manual training room, and 2 smaller teachers' rooms, with wide corridors connecting all rooms. On the second floor the center of the building is a large assembly hall, a portion of the floor of the room being used as a corridor passing between the seats and the platform. There are 5 class rooms on this floor, besides 2 small recitation rooms, and a considerable space is given over for hall cloak rooms.

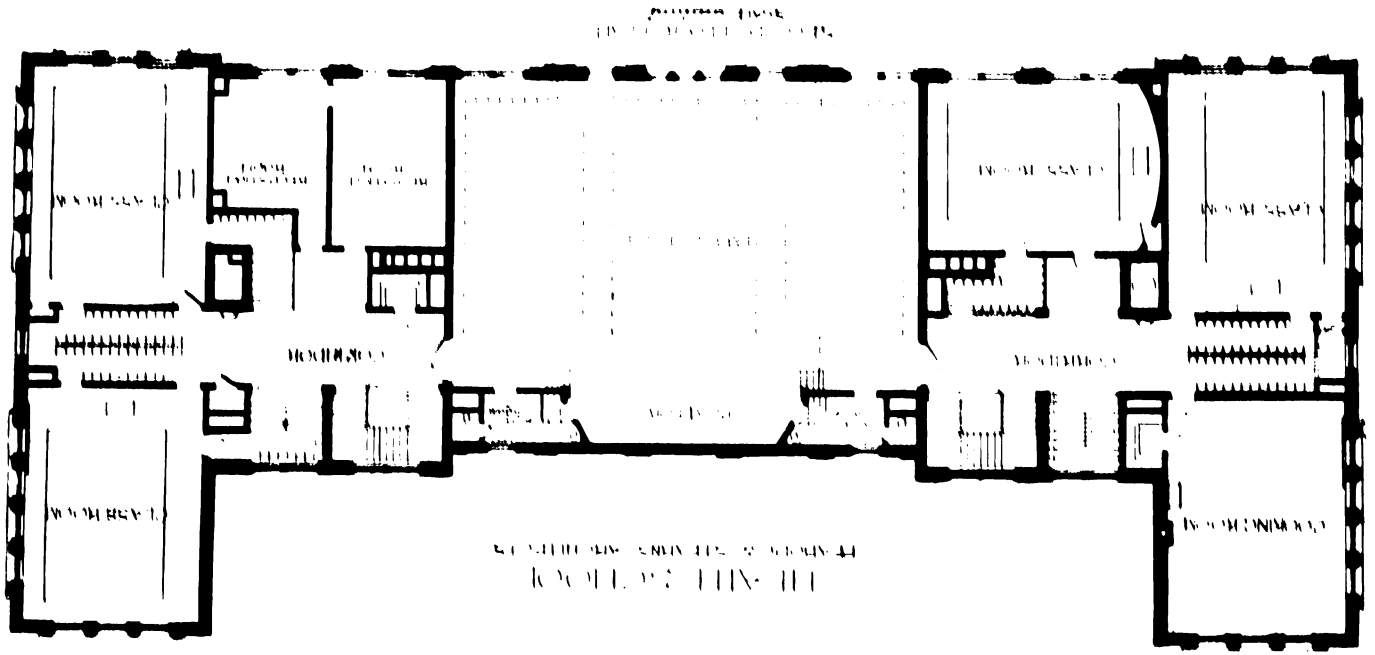
The high-school installation in Brookline comprises 2 buildings, 1 the regulation high school building, and the other a manual training building, both facing a large municipal playground several acres in extent. Facing the playground, also, a fine building for municipal baths is now being erected, provision being made for heat and light for all three buildings from the plant installed in the manual training building. The high school building is T shaped, the assembly hall being located in the stem of the T. The building contains class rooms and recitation rooms for 600 pupils, although the present enrollment is only about three-fourths of this number. The manual train-

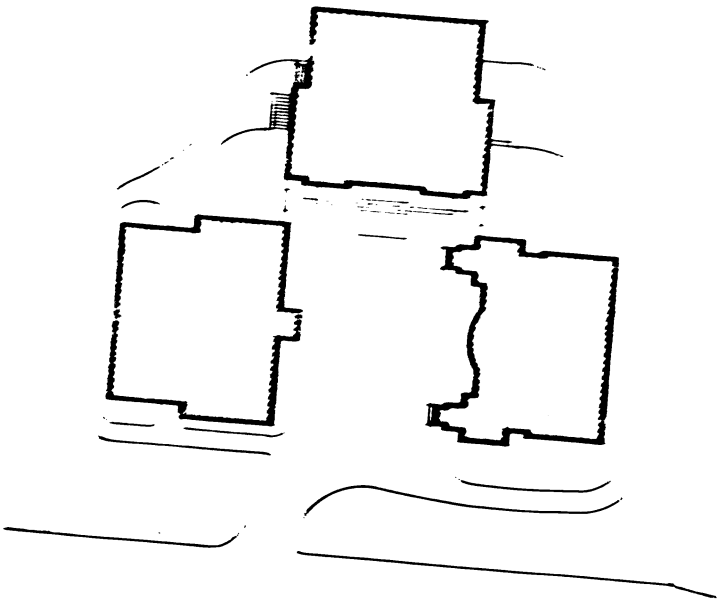
HEATH SCHOOL. BROOKLINE. PEABODY & STEARNS, ARCHITECTS.


HEATH SCHOOL
PEABODY & STEARNS ARCHITECTS
BOYS TOILET
GIRLS TOILET
CORRIDOR
CORRIDOR
GYMNASIUM
BOILER ROOM
BOYS LOCKERS
GIRLS LOCKERS
STORAGE
COAL
BOYS BATH ROOM
GIRLS BATH ROOM
BASEMENT PLAN
SCALE

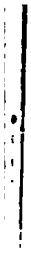

GYMNASIUM
BOILER ROOM
COAL
STORAGE
BASEMENT PLAN

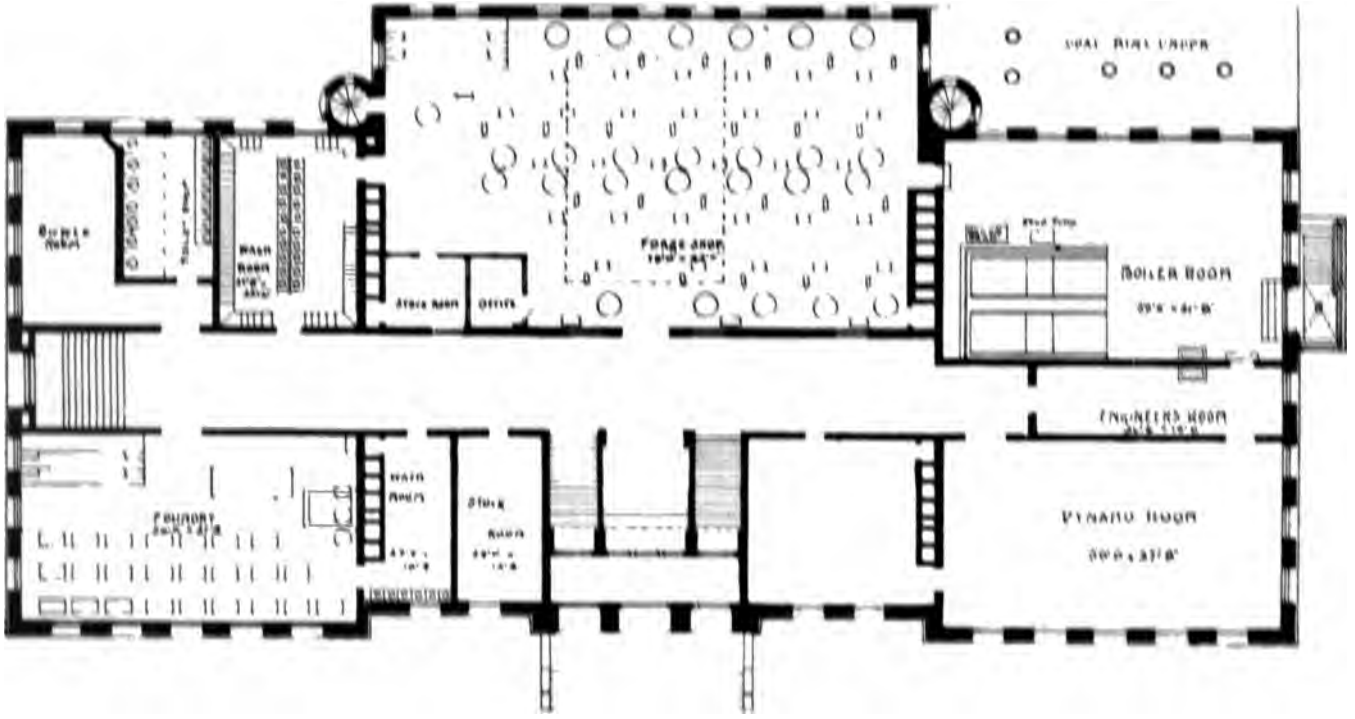






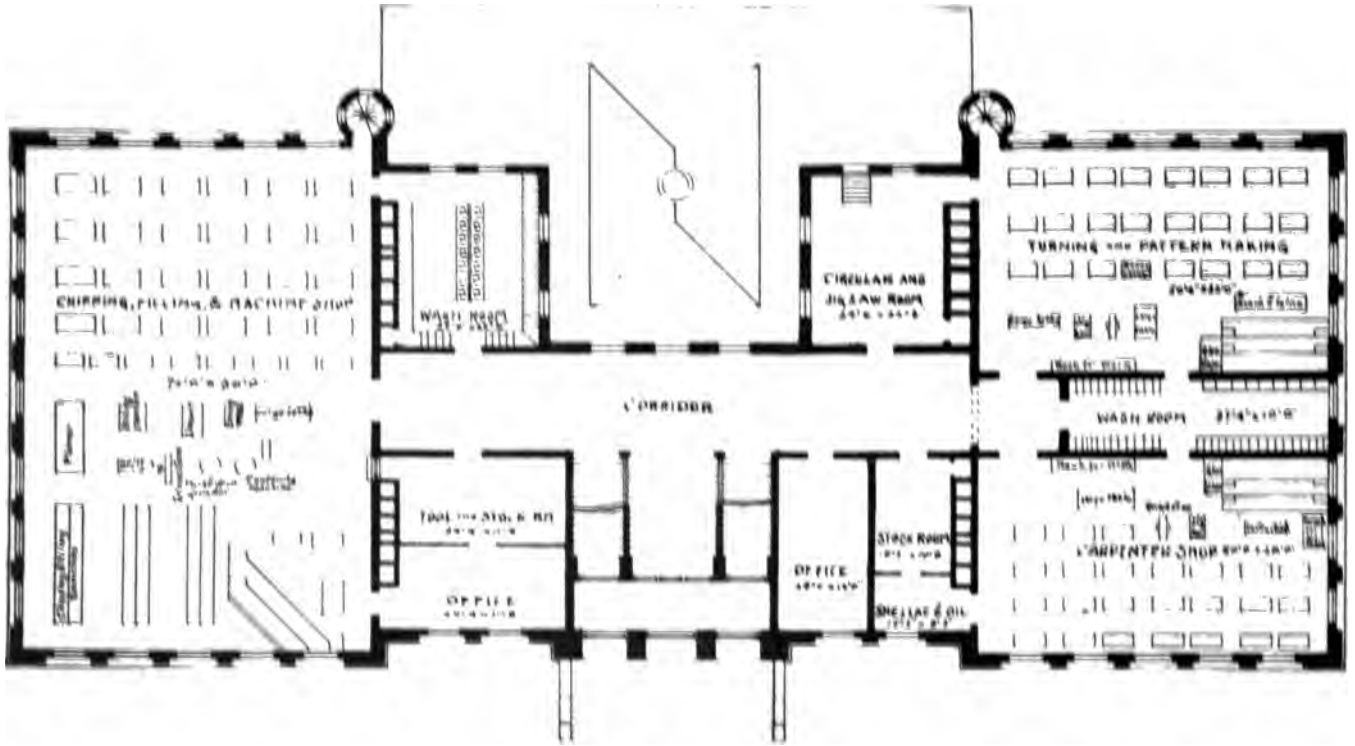
MANUAL TRAINING BUILDING, HIGH SCHOOL BROOKLINE F. JOSEPH UNTERBERG, ARCHITECT.





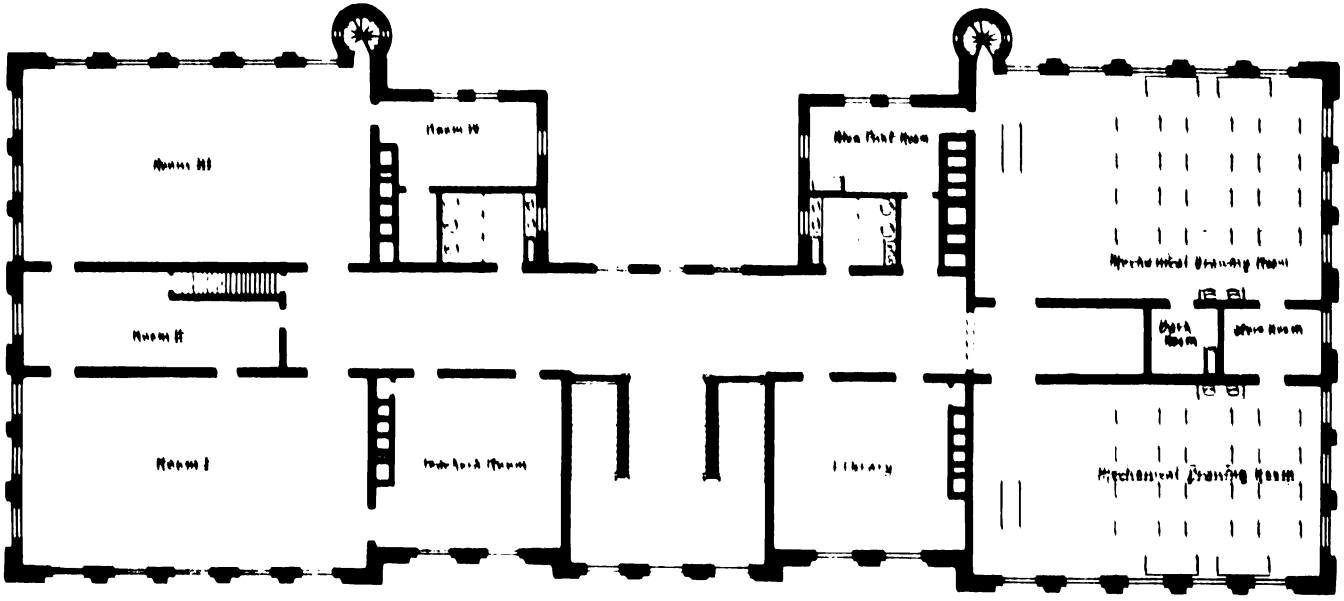
BASEMENT PLAN

MANUAL TRAINING BUILDING, HIGH SCHOOL, BROOKLINE.



FIRST FLOOR PLAN

MANUAL TRAINING BUILDING, HIGH SCHOOL, BROOKLINE.



SECOND FLOOR

MANUAL TRAINING BUILDING, HIGH SCHOOL, BROOKLINE

MANUAL TRAINING BUILDING, HIGH SCHOOL, BROOKLINE

(Wood turning laboratory.)

MANUAL TRAINING BUILDING, TRADE BUILDING, BROOKLINE

(Machine tool laboratory)

MANUAL TRAINING school, Hall school, BROOKLINE.

(Printing laboratory.)

MANUAL TRAINING School, High School, BROOKLINE
(Machine room.)

MANUAL TRAINING BUILDING, THIRD BUILDING, BROOKLINE.

MANUAL TRAINING SCHOOL, HIGH SCHOOL, BRUNSWICK
(Southwestern Group)

RHODE ISLAND NORMAL SCHOOL, PROVIDENCE

ing building is worthy of special notice, being one of the best buildings in the country for the purposes designed. There is everywhere liberal allowance for floor space, which does much to render the whole attractive. The building is of basement and 2 floors. The basement, which is almost entirely above ground, contains boiler and engine rooms, forge shop, and foundry rooms, with stock rooms and wash rooms adjoining each, the general toilet room with a bicycle room adjoining, and a large dynamo room. The forge shop is in part under the main building and in part in a 1-story extension, which permits of a skylight, giving excessive height and abundant light and air. The first floor contains a carpenter shop lighted on two sides, and turning and pattern making shops lighted on two sides with a washroom between the two. At the other end of the building is a large machine shop, 72 by 50 feet, lighted on 3 sides, and provided with a washroom and tool and stock room. This floor contains a small room for circular and jig saw work, as well as 2 office rooms. The second floor contains 2 rooms for mechanical drawing, with a dark room and a blueprint room, storeroom and toilet room, all grouped at one end of the building. At the other end of this floor are 4 rooms for domestic art and art metal work. This floor contains also library and teachers' rooms. The building cost $93,000 and about $30,000 additional to equip.

A view and plans of all floors are reproduced, with views of rooms.

The Commission is indebted to Mr. George I. Aldrich, superintendent, for the details and views of these schools.

PROVIDENCE, R. I.

Possibly the most notable elementary building here is the Rhode Island Normal School, of which a view is given. This building's arrangement and equipment for normal work seem to leave nothing to be desired. The various departments have their individual libraries, while one of the prominent features of the school is the large general library. There is also a handsome assembly hall, which seems to be the actual center for the entire work of the school. A fine gymnasium, with both dressing and locker rooms is also provided. Kindergarten rooms are very attractive. Facilities for instruction in domestic science are usually very complete. The building is beautifully situated on a commanding site near the State capitol building, on large grounds which are very well kept, as the view shows.

BALTIMORE.

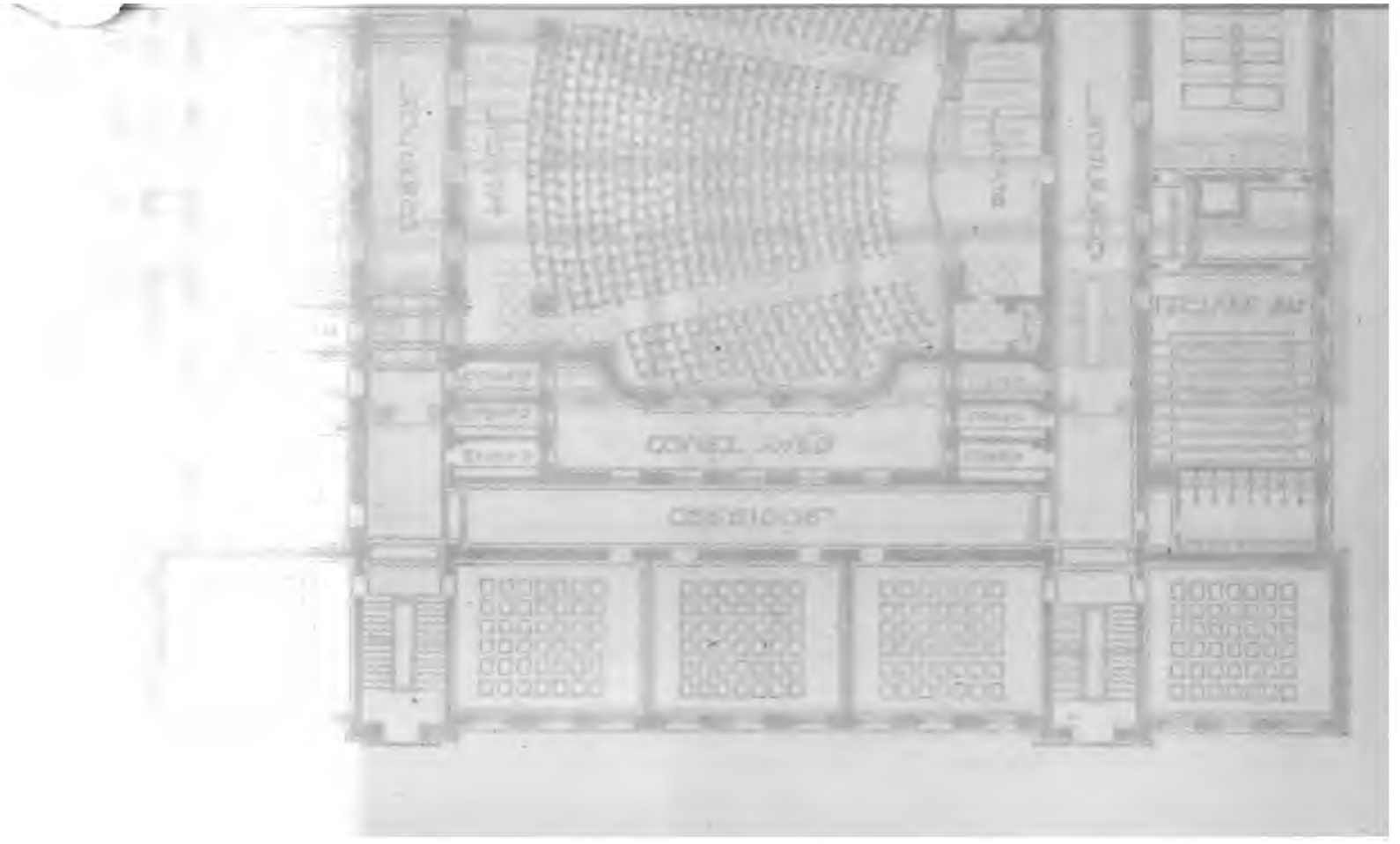
The new Eastern High School for girls in Baltimore is one building which favorably impressed the Commission. This building stands on a site about 200 feet square and in ground plan conforms to the plan of the lot. The cost, including the site, was about $400,000.

The building is of plain red brick and Indiana limestone. The walls are laid with narrow tuck joints in mortar matching the bricks in color. A cut of the building accompanies this report, and also floor plans. These show the character of the building very completely. Generally described, the building is in the form of a hollow square, with assembly room in the center on the first floor. Light for this room is received through the roof and on the two sides, which open on rather narrow interior courts. There is a wide gallery across the rear of the hall, with access from the second floor corridor. The floor of the hall inclines toward the stage, which is about 15 feet deep and nearly twice as wide, provided with coat rooms flanking and having an entrance from the corridor behind. The hall has seats for about 1,000 pupils.

Beneath the auditorium in the basement is the gymnasium, an ample room well equipped, and having adjacent to it commodious shower baths and locker rooms. Heating and ventilating plants are also in the basement, locomotive boilers being used for steam, the ventilating fans being driven by electric motors, using current taken from the lighting corporation. In the basement there is a large room to be used for a complete equipment for domestic science, and under the front of the building across the corridor from the gymnasium is a running track.

One interesting feature of the basement occupation is the lunch room, a large room containing 15 tables, each table provided with 9 seats. Across one end of the room is a counter, behind which are the sideboards, gas range and sink. The building contains strictly 32 class rooms, 26 by 32 feet in size. The rooms are excellently lighted, having unusually large windows, with large single lights. There are 4 flights of stairs, as shown on the plans, 1 near each corner of the building, and each floor is provided with a corridor with an interior corridor entirely around the inside of all exterior rooms, the main corridors being 12 feet wide and side corridors 10 feet. There is a small coat room provided for each class room but separated therefrom and opening on the corridor. One point of interest is the music room, the size of 2 class rooms, with stage across one end. One class room has been converted also into a very satisfactory lecture room for science. The building has the usual rooms for biological, physical, and chemical laboratories and storerooms. The drawing room is more than twice as large as an ordinary class room and receives light from one side and from above. The roof of the building is covered with smooth tiles and has a high parapet, being designated and used for a playground, access thereto being easy by means of ample stairways leading from the third floor corridor.

Plans of this building are reproduced and also a small view of the playground on the roof, the latter being interesting in showing the *Commission* included in the view.



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ROOF PLAYGROUND, THAT SCHOOL, BALTIMORE

(Members of the Schoolhouse Commission inspecting.)

MINUTES OF SCHOOLHOUSE COMMISSION.

The minutes of the Commission for the purpose of submitting to Congress a plan for the consolidation of public schools in the District of Columbia is hereto appended:

SEPTEMBER 20, 1906.

Members of the Commission: The superintendent of schools, Dr. William E. Chancellor; the Engineer Commissioner, Maj. John Biddle; and the Supervising Architect of the Treasury, Mr. James Knox Taylor.

The Commission held its first meeting in the office of the Engineer Commissioner, at the District building, at 9.30 a. m., September 20, 1906; all the members being present. Upon motion of Doctor Chancellor, the Engineer Commissioner was elected chairman of the Commission.

The Commission decided that the first step to be taken was to make an inspection of school buildings and school sites in the District of Columbia.

JOHN BIDDLE, *Chairman.*

NOVEMBER 2, 1906.

All members of the Commission made an inspection this date of the following school buildings: Good Hope, Stanton, Garfield, Congress Heights, Hillsdale, Birney, Birney Annex, Van Buren, Van Buren Annex.

JOHN BIDDLE, *Chairman.*

NOVEMBER 5, 1906.

All members of the Commission made an inspection this date of the following school buildings: Orr, an abandoned school site on Anacostia road, Benning Road School and Annex, Benning School, Burrville School, Kenilworth, Blow.

JOHN BIDDLE, *Chairman.*

NOVEMBER 7, 1906.

All members of the Commission made an inspection this date of the following school buildings: Wheatley, Ivy City, Hamilton, Langdon, Bunker Hill, Brookland, Eckington, Emery, and vacant sites at Langdon and East Brookland.

JOHN BIDDLE, *Chairman.*

NOVEMBER 8, 1906.

All members of the Commission made an inspection this date of the following school buildings: Petworth, Bates Road, Woodburn, Fort Slocum, Takoma, Brightwood, Rock Creek Ford Road, Military Road.

JOHN BIDDLE, *Chairman.*

NOVEMBER 12, 1906.

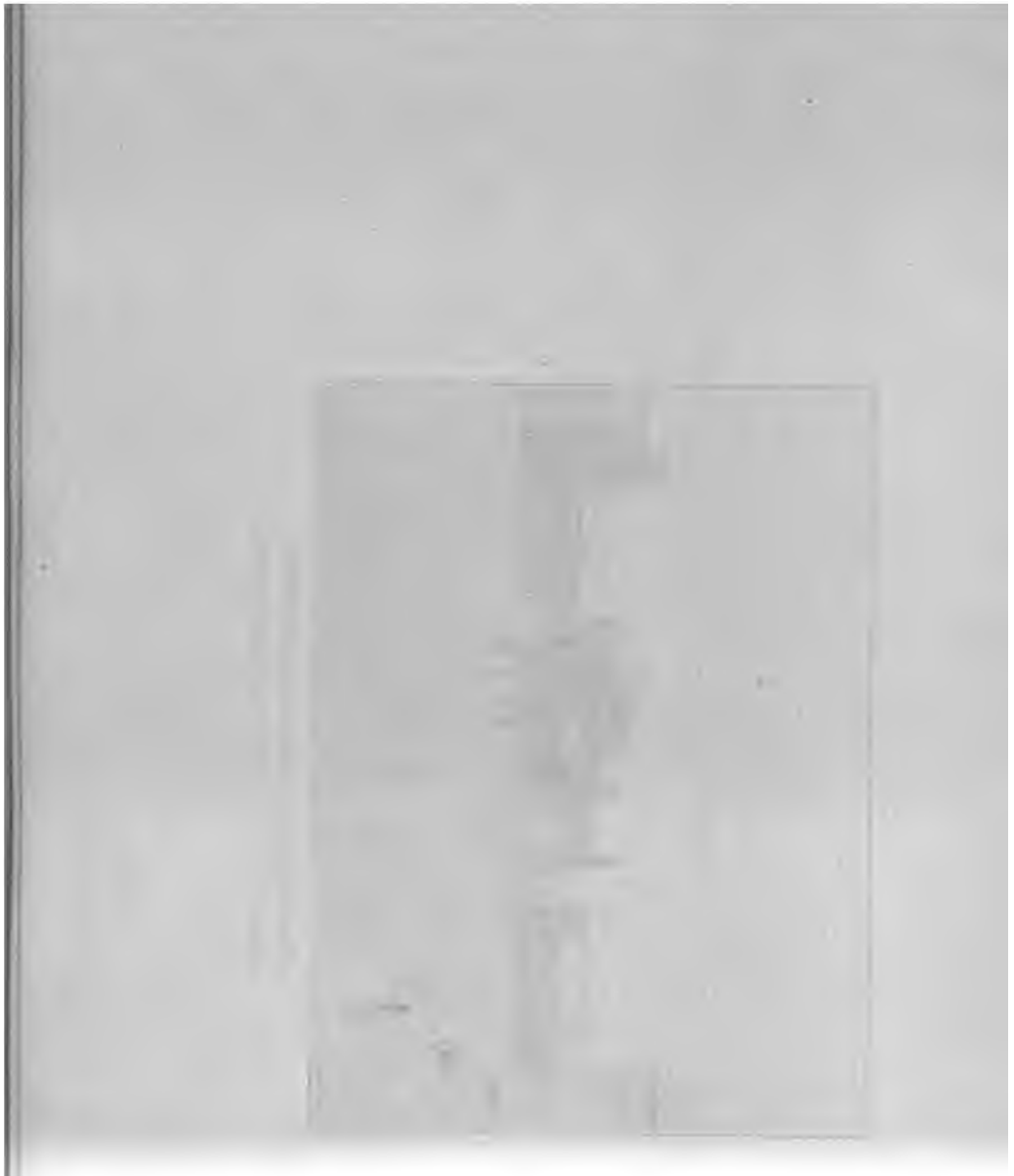
All members of the Commission made an inspection this date of the following school buildings: Grant Road, Chevy Chase, Fort Reno, Tennallytown, Chain Bridge, Conduit Road, and Reservoir.

JOHN BIDDLE, *Chairman.*

NOVEMBER 15, 1906.

All members of the Commission made an inspection this date of the following school buildings: Bowen, Buchanan, Cranch, Tyler, French, Lenox, Giddings, McCormick, Dent, Brent, Lincoln.

JOHN BIDDLE, *Chairman.*



MAY 3, 1907.

All members of the Commission inspected schoolhouses in Rochester and Syracuse, N. Y., and Springfield and Brookline, Mass. Two members inspected buildings at Boston, Mass., and Providence, R. I. The Commission left Washington on April 29 and returned on the 3d of May. It was accompanied by Mr. J. A. Chamberlain, director of manual training.

JOHN BIDDLE, *Chairman.*

MAY 6, 1907.

The Commission held a meeting at which were present, Maj. John Biddle, Dr. W. E. Chancellor, Mr. J. K. Taylor, and Capt. Jay J. Morrow. Captain Morrow having been assigned to duty as Engineer Commissioner of the District of Columbia, became ex officio a member of the Commission, vice Major Biddle, the retiring Engineer Commissioner.

By motion Captain Morrow was elected chairman.

The Commission inspected the following school buildings: Berret, Dennison, Garrison, Harrison, Ross, Monroe, Bruce, Hubbard, Johnson, Johnson Annex, Wilson, Morgan, Adams, Miner, and Franklin.

JAY J. MORROW, *Chairman.*

MAY 7, 1907.

The Commission inspected the following schools: Wormley, Threlkeld, Western High, Fillmore, Industrial Home, Jackson, High Street, Addison, Curtis, and Hyde.

JAY J. MORROW, *Chairman.*

MAY 8, 1907.

The Commission inspected the following schools: Eastern High, Towers, Wallach, M Street High, Armstrong Manual Training, McKinley Manual Training, Business High, Polk, Henry, and Central High.

JAY J. MORROW, *Chairman.*

MAY 20, 1907.

Capt. Jay J. Morrow and Dr. W. E. Chancellor of the Commission, accompanied by Mr. Snowden Ashford, inspector of buildings, left the city on May 16 and inspected school buildings in Boston and Newton, Mass., on May 17, and (excepting Mr. Ashford) in New York on May 18.

JAY J. MORROW, *Chairman.*

SEPTEMBER 17, 1907.

Capt. Jay J. Morrow and Dr. W. E. Chancellor, accompanied by Mr. Snowden Ashford, left the city on September 7, inspecting schools in St. Louis on the 9th and 10th, Chicago on the 11th, Muskegon on the 12th, Detroit on the 13th, and Cleveland on the 14th.

JAY J. MORROW, *Chairman.*

SEPTEMBER 19, 1907.

The Commission held a meeting this date in the office of the superintendent of schools, in the Franklin building, to discuss plans and report. The Commission met at 9.15 a. m. and adjourned at 11 o'clock to meet again September 24. Mr. Chamberlain and Mr. Ashford were present.

JAY J. MORROW, *Chairman.*